

# **EXHIBIT B1**

Alan Campion, Ph.D.

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IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF NEW JERSEY

IN RE: JOHNSON & JOHNSON )  
TALCUM POWDER PRODUCTS )  
MARKETING, SALES PRACTICES )  
AND PRODUCTS LIABILITY ) MDL NO:  
LITIGATION ) 16-2738 (FLW) (LHG)  
THIS DOCUMENT RELATES TO )  
ALL CASES )

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ORAL AND VIDEOTAPED/REALTIMED DEPOSITION OF

ALAN CAMPION, Ph.D.

JANUARY 9, 2019

VOLUME 1

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## Alan Campion, Ph.D.

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<p>1 ORAL AND VIDEOTAPED/REALTIMED DEPOSITION OF ALAN</p> <p>2 CAMPION, PH.D., produced as a witness at the</p> <p>3 instance of the Defendants Johnson &amp; Johnson</p> <p>4 entities, and duly sworn, was taken in the</p> <p>5 above-styled and numbered cause on January 9, 2019,</p> <p>6 from 9:16 a.m. to 2:58 p.m., before Karen L. D.</p> <p>7 Schoeve, CSR, RDR, CRR, in and for the State of</p> <p>8 Texas, reported by computerized machine shorthand,</p> <p>9 at the Hilton Austin, 500 E 4th St, Austin, Texas,</p> <p>10 pursuant to the Federal Rules of Civil Procedure and</p> <p>11 the provisions stated on the record or attached</p> <p>12 hereto.</p> <p>13 It is further agreed that Rule 30(b)(5) is</p> <p>14 waived by agreement of the parties.</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p>	<p>1 A P P E A R A N C E S (Continued)</p> <p>2</p> <p>3 JACK N. FROST, JR., ESQUIRE</p> <p>4 DRINKER BIDDLE &amp; REATH LLP</p> <p>5 600 Campus Drive</p> <p>6 Florham Park, New Jersey 07932-1047</p> <p>7 D: 973.549.7296</p> <p>8 T: 973.549.7000</p> <p>9 F: 973.360.9831</p> <p>10 Jack.Frost@dbi.com</p> <p>11</p> <p>12 FOR DEFENDANT IMERY'S TALC AMERICA, INC.</p> <p>13</p> <p>14 KENNETH J. FERGUSON, ESQUIRE</p> <p>15 JENNIFER FOSTER, ESQUIRE</p> <p>16 GORDON REES SCULLY MANSUKHANI, LLP</p> <p>17 816 Congress Avenue, Suite 1510</p> <p>18 Austin, Texas 78701</p> <p>19 D: 512.582.6472 (Mr. Ferguson)</p> <p>20 D: 512.582.6477 (Ms. Foster)</p> <p>21 T: 512.391.0197</p> <p>22 F: 512.391.0183</p> <p>23 kferguson@grsm.com</p> <p>24 jfoster@grsm.com</p> <p>--AND--</p> <p>MARK K. SILVER, ESQUIRE</p> <p>COUGHLIN DUFFY LLP</p> <p>350 Mount Kemble Avenue</p> <p>P.O. Box 1917</p> <p>Morristown, New Jersey 07962</p> <p>D: 973.631.6045</p> <p>T: 973.267.0058</p> <p>F: 973.267.6442</p> <p>msilver@coughlinduffy.com</p>
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<p>1 EXHIBIT INDEX</p> <p>2 NO. DESCRIPTION PAGE</p> <p>3 Exhibit 1 10</p> <p>4 Rule 26 Expert Report of Alan Campion,</p> <p>5 Ph.D., dated 11/16/18</p> <p>6 Exhibit 2 35</p> <p>7 Invoices, dated from 03/06/18</p> <p>8 through 07/02/18</p> <p>9 Exhibit 3 112</p> <p>10 Letter dated 06/23/18 to David Dearing</p> <p>11 from John Godleski, M.D.</p> <p>12 Re: Diane Bower</p> <p>13</p> <p>14 Exhibit 4 122</p> <p>15 Article from Human Pathology, Vol 15</p> <p>16 No. 11, dated 11/1984 entitled "Raman</p> <p>17 Microspectroscopy in Human Pathology"</p> <p>18 Exhibit 5 127</p> <p>19 Article from Applied Spectroscopy,</p> <p>20 Volume 64, Number 6, 2010, entitled</p> <p>21 "Study of Inorganic Particles, Fibers,</p> <p>22 and Asbestos Bodies by Variable Pressure</p> <p>23 Scanning Electron Microscopy with Annexed</p> <p>24 Energy Dispersive Spectroscopy and</p> <p>Micro-Raman Spectroscopy in Thin</p> <p>Sections of Lung and Pleural Plaque"</p> <p>Exhibit 6 132</p> <p>Article from Elsevier, Vibrational</p> <p>Spectroscopy, "The use of Raman spectroscopy</p> <p>to identify inorganic phases in iatrogenic</p> <p>pathological lesions of patients with</p> <p>malignant pleural mesothelioma," by</p> <p>M. Musa, A. Croce, M. Allegrina, C.</p> <p>Rinaudo, E. Belluso, D. Bellis, F.</p> <p>Toffalorio, G. Veronesi</p> <p>Exhibit 7 149</p> <p>"Introductory Raman Spectroscopy,"</p> <p>Second Edition, Elsevier 2003 by</p> <p>John R. Ferraro, Kazuo Nakamoto and</p> <p>Chris W. Brown</p>	<p>1 P R O C E E D I N G S</p> <p>2 THE VIDEOGRAPHER: Here begins the</p> <p>3 deposition of Dr. Alan Campion. Today's date is</p> <p>4 January 8th, 2019. The time is 9:16 a.m.</p> <p>5 Will the court reporter please swear</p> <p>6 in the witness.</p> <p>7 ALAN CAMPION, Ph.D.,</p> <p>8 having been first duly sworn to tell the truth, the</p> <p>9 whole truth, and nothing but the truth, so help him</p> <p>10 God, testified as follows:</p> <p>11 MR. CHACHKES: All set?</p> <p>12 THE COURT REPORTER: Yes.</p> <p>13 EXAMINATION</p> <p>14 BY MR. CHACHKES:</p> <p>15 Q. Good morning.</p> <p>16 A. Good morning.</p> <p>17 Q. Sir, my name is Alex Chachkes. I'm with</p> <p>18 the law firm of Orrick, Herrington. I represent</p> <p>19 J&amp;J.</p> <p>20 Have you ever had your deposition</p> <p>21 taken before?</p> <p>22 A. No.</p> <p>23 Q. Okay. This is your first one?</p> <p>24 A. Yes.</p>

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<p>1 Q. Okay. I'm sure you're familiar with the</p> <p>2 ground rules. I'm gonna ask you questions. If you</p> <p>3 could answer them consistent with your oath.</p> <p>4 You could do that?</p> <p>5 A. Yes.</p> <p>6 Q. Any reason you can't answer fully and</p> <p>7 truthfully today?</p> <p>8 A. No.</p> <p>9 Q. Okay. If you would, when answering</p> <p>10 questions, just wait for me to finish my questioning</p> <p>11 and then answer orally because we have a transcript.</p> <p>12 You can do that?</p> <p>13 A. Yes.</p> <p>14 Q. Okay. No nodding, no "uh-huh." Just</p> <p>15 yeses, noes, or whatever is appropriate to the</p> <p>16 question.</p> <p>17 A. Yes.</p> <p>18 Q. Okay.</p> <p>19 (Deposition Exhibit 1 marked for</p> <p>20 identification.)</p> <p>21 Q. (BY MR. CHACHKES) Here before you is</p> <p>22 Exhibit 1. Do you recognize that as the report</p> <p>23 from -- your report from this case?</p> <p>24 A. Yes.</p>	<p>1 about use of the University property and facilities</p> <p>2 for outside activities. It also has very strict</p> <p>3 regulations about time spent by faculty pursuing</p> <p>4 other outside activities.</p> <p>5 And so I wanted to make a clear</p> <p>6 distinction and separation between my</p> <p>7 responsibilities to the University and any other</p> <p>8 activities that I might be pursuing.</p> <p>9 Q. Okay. And attached to your expert report</p> <p>10 as Exhibit A is your CV; is that correct?</p> <p>11 A. Correct.</p> <p>12 Q. Are there any updates that you want to</p> <p>13 make between when you published this and now?</p> <p>14 A. It's current.</p> <p>15 Q. When and how were you first contacted for</p> <p>16 this case?</p> <p>17 A. I believe I was first contacted by Leigh</p> <p>18 and Margaret Thompson who asked the question could I</p> <p>19 identify talc using Raman spectroscopy.</p> <p>20 Q. Okay. And "Leigh" is Leigh O'Dell who's</p> <p>21 here at the deposition?</p> <p>22 A. Yes. Correct.</p> <p>23 Q. And so the -- so attached to your report</p> <p>24 is a publication on which you're a co-author</p>
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<p>1 Q. Okay. And you're familiar with the phrase</p> <p>2 "multidistrict litigation" or "MDL"?</p> <p>3 A. Yes.</p> <p>4 Q. Okay. And this is your report in the MDL?</p> <p>5 A. Yes.</p> <p>6 Q. Tell me what your current employment is.</p> <p>7 A. I'm a professor of chemistry, University</p> <p>8 of Texas at Austin.</p> <p>9 Q. Okay. And do you have any other</p> <p>10 employment or sources of income?</p> <p>11 A. I have an LLC for these consulting</p> <p>12 activities.</p> <p>13 Q. Okay. Anything else?</p> <p>14 A. No.</p> <p>15 Q. And was this LLC established for the</p> <p>16 purposes of this particular litigation?</p> <p>17 A. Yes.</p> <p>18 Q. And this consulting?</p> <p>19 A. Yes.</p> <p>20 Q. Does it have any other members or</p> <p>21 employees other than you?</p> <p>22 A. No.</p> <p>23 Q. And why did you establish the LLC?</p> <p>24 A. The University has very strict regulations</p>	<p>1 relating to that subject, correct?</p> <p>2 A. Yes.</p> <p>3 Q. Was this contact after you wrote this</p> <p>4 paper or before? What's the sequence there?</p> <p>5 A. Before.</p> <p>6 Q. And was the inquiry from plaintiffs'</p> <p>7 counsel what prompted you to write the report -- or</p> <p>8 write the article?</p> <p>9 A. Yes.</p> <p>10 Q. Okay. How did you come into contact with</p> <p>11 the other co-authors of the paper? How did you</p> <p>12 collectively decide to write this?</p> <p>13 A. So I can't recall the exact sequence of</p> <p>14 events, but I had a phone conversation with</p> <p>15 Dr. Godleski, who, I believe, had independently</p> <p>16 tried to do experiments at Renishaw. It's also</p> <p>17 possible that I called Renishaw directly, and they</p> <p>18 said that they had already been contacted by</p> <p>19 Dr. Godleski.</p> <p>20 Q. Okay. So it's fair to say you were the</p> <p>21 one who put the team together for the paper?</p> <p>22 A. It was a collaborative effort between me</p> <p>23 and Dr. Godleski. We work -- we worked together</p> <p>24 very closely for a period of several years.</p>

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<p>1 Q. Okay. Whose idea was it to contact 2 Dr. Godleski for the purposes of this paper? 3 A. I can't recall. 4 Q. Could have been plaintiffs' counsel? 5 A. I can't recall. 6 Q. Did you know Dr. Godleski prior to contact 7 from plaintiffs' counsel for the purposes of this 8 case? 9 A. No. 10 Q. Okay. So is there any other way you 11 would've known about Dr. Godleski other than through 12 plaintiffs' counsel? 13 A. No. 14 Q. And what about the other co-authors? How 15 did you come into communication with them for the 16 purposes of this paper that is Exhibit B to your 17 declaration? 18 A. Those were long-time collaborators of 19 Dr. Godleski and he wanted to recognize their work 20 by including them as co-authors. 21 Q. Okay. So each of -- I'm just gonna name 22 their last names. 23 Each are Smith, Fedulov -- 24 A. Pardon me. Smith is associated with</p>	<p>1 A. They're technical people, but they're also 2 responsible for marketing. They're responsible for 3 strategic planning. They have lots of 4 responsibilities. 5 Q. Do they do lab work? 6 A. Yes. 7 Q. And when you spoke to plaintiffs' counsel 8 about the possibility of using Raman microscopy for 9 the purposes of the talc litigation, what did they 10 say to you? 11 MR. DEARING: First of all, I'm gonna 12 object to the content of our communications. I 13 think you can ask him what his directive is, but any 14 specific conversations we had with our expert are 15 privileged. 16 MR. CHACHKES: I'm going to disagree 17 with that. I mean, if you -- if he wrote the paper, 18 as he testified, at the prompting of plaintiffs' 19 counsel, it's particularly relevant. So I'll ask 20 you to make your objections -- 21 MR. DEARING: I don't believe that's 22 what he said. 23 MR. CHACHKES: Yeah. 24 MR. DEARING: He didn't write the</p>
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<p>1 Renishaw Corporation. 2 Q. Okay. All right. So the collaborators or 3 long-time collaborators with Godleski are Fedulov, 4 Gregory, and Fan? 5 A. Correct. 6 Q. Okay. And how did you come in contact or 7 communication with Smith as a co-author of this 8 paper? 9 A. So I have had a long-time relationship 10 with Renishaw, and he is a project specialist. He 11 does demonstrations. He consults with potential 12 customers. I think his title is research scientist 13 or principal scientist, something like that. 14 Q. And whose decision was it to bring him 15 into the team for this paper? 16 A. It was either Tim Prusnick or Rich 17 Bormett, whom I've known for many years. Their 18 responsibilities at Renishaw have changed over the 19 years. 20 So one of them is responsible for, I 21 think, marketing in the United States, and the other 22 one's responsible for North and South America, or 23 Canada and Mexico. I just can't recall. 24 Q. Okay. Are they marketing people?</p>	<p>1 paper at our prompting. 2 MR. CHACHKES: Okay. Can I have the 3 question read back. 4 (Last question was read.) 5 MR. DEARING: Yeah, we're objecting to 6 that. You said for the purpose of talc litigation. 7 That's privileged communications. 8 Q. (BY MR. CHACHKES) When you spoke to 9 counsel about doing research into the applicability 10 of Raman spectroscopy to investigating the presence 11 of inorganic substances in pathology slides, what 12 did they say to you? 13 MR. DEARING: Objection. That's the 14 same objection -- that's the same question, okay. 15 You can't ask him about what specific conversations 16 we've had about the litigation. That's privileged. 17 MR. CHACHKES: Okay. So you're -- 18 this is -- you're saying this is attorney/client 19 privilege? 20 MR. DEARING: Yes, absolutely. You 21 can ask him about the research he did or whatever, 22 but the content of our communications is privileged. 23 Q. (BY MR. CHACHKES) So you had no inkling 24 or inclination to do the work that is in this paper</p>

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<p>1 prior to contact from counsel, correct?</p> <p>2 A. That's correct.</p> <p>3 Q. And you know that John Godleski does work</p> <p>4 for plaintiffs in talc cases, correct?</p> <p>5 A. Correct.</p> <p>6 Q. All right. And you know that Yuwei Fan</p> <p>7 also does work for plaintiffs in talc cases,</p> <p>8 correct?</p> <p>9 A. I did not know that.</p> <p>10 Q. Okay. He works with Dr. Godleski.</p> <p>11 Do you know that?</p> <p>12 A. Yes.</p> <p>13 Q. Okay. Do you know why -- now, there's a</p> <p>14 disclosure in the paper towards the end of -- let me</p> <p>15 just read it to you -- that a potential conflict of</p> <p>16 interest -- do you see -- you know -- do you recall</p> <p>17 that?</p> <p>18 A. Yes.</p> <p>19 Q. Okay. And it says that you and</p> <p>20 Dr. Godleski have "served as consultants and</p> <p>21 provided expert testimony in talc and other</p> <p>22 environmental litigation," correct?</p> <p>23 A. That's what it says, yes.</p> <p>24 Q. Okay. Is it accurate?</p>	<p>1 purpose of that statement? Why is it in there?</p> <p>2 A. I don't know the extent of Dr. Fan's</p> <p>3 involvement. I don't know whether he was</p> <p>4 compensated or not. I simply don't know.</p> <p>5 Q. If you wouldn't mind just focusing on the</p> <p>6 question I asked.</p> <p>7 What's the purpose of this conflict of</p> <p>8 interest statement in your paper?</p> <p>9 A. So it is to make it clear that -- let me</p> <p>10 think about this.</p> <p>11 It's required by journals, okay, to</p> <p>12 declare any potential conflicts of interest, to make</p> <p>13 sure the results reported therein are not influenced</p> <p>14 by outside influences.</p> <p>15 Q. And the only reason you did this was</p> <p>16 because it's required or do you think it was</p> <p>17 actually a good thing?</p> <p>18 A. It's a good thing. I think disclosure is</p> <p>19 a good thing.</p> <p>20 Q. And in light of that policy and in light</p> <p>21 of the fact that you believe it's a good thing, do</p> <p>22 you think that the paper should also disclose</p> <p>23 Mr. Fan under the conflict of interest statement if</p> <p>24 he's taking plaintiffs' money for talc litigation?</p>
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<p>1 A. Certainly, he had at that point. I had</p> <p>2 not at that point, so perhaps what we meant was</p> <p>3 there was the potential. I really don't recall. I</p> <p>4 just wanted to make sure that we had disclosed</p> <p>5 everything --</p> <p>6 Q. Okay.</p> <p>7 A. -- that was relevant.</p> <p>8 Q. Did you bill plaintiffs' counsel for your</p> <p>9 work in underlying this paper?</p> <p>10 A. Yes.</p> <p>11 Q. Okay. So all your work for the paper</p> <p>12 that's attached to your expert report was billed to</p> <p>13 plaintiffs' counsel?</p> <p>14 A. Yes.</p> <p>15 Q. And do you know why the conflict of</p> <p>16 interest statement does not include Mr. Fan?</p> <p>17 A. No.</p> <p>18 Q. If he has taken plaintiffs' money for talc</p> <p>19 litigation, he should have been in that disclosure,</p> <p>20 shouldn't he have?</p> <p>21 MR. DEARING: Objection; form.</p> <p>22 Speculation.</p> <p>23 A. I don't have an answer to that.</p> <p>24 Q. (BY MR. CHACKES) Well, what's the</p>	<p>1 MR. DEARING: Objection; form.</p> <p>2 Speculation.</p> <p>3 A. I have no knowledge of whether he was</p> <p>4 compensated or not.</p> <p>5 Q. (BY MR. CHACKES) So it's a hypothetical.</p> <p>6 If he did take money from plaintiffs in talc</p> <p>7 litigation, should he be in that conflict statement?</p> <p>8 MR. DEARING: Same objection. That's</p> <p>9 an inaccurate hypothetical.</p> <p>10 A. I'm not sure what you're asking me and</p> <p>11 whether I'm obligated to give you an answer or not.</p> <p>12 Q. (BY MR. CHACKES) If somebody on the</p> <p>13 paper is taking money from plaintiffs' lawyers in</p> <p>14 talc litigation, shouldn't they be in -- listed in</p> <p>15 the declaration of conflict of interests? It's a</p> <p>16 pretty straightforward question.</p> <p>17 MR. DEARING: Objection; form.</p> <p>18 Speculation.</p> <p>19 A. I really can't speculate. It's a</p> <p>20 hypothetical question.</p> <p>21 Q. (BY MR. CHACKES) Okay. So there are</p> <p>22 instances when somebody is taking money from</p> <p>23 plaintiffs' lawyers in talc litigation and you don't</p> <p>24 think they should disclose that fact in the</p>

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<p>1 declaration of conflict of interests?</p> <p>2 A. I didn't say that.</p> <p>3 Q. What are you saying?</p> <p>4 A. I'm saying I don't know.</p> <p>5 Q. Okay. Is this article published yet?</p> <p>6 A. Yes.</p> <p>7 Q. Okay. Are you gonna take steps to see</p> <p>8 that it's amended to disclose Mr. Yamm -- Mr. Fan in</p> <p>9 the conflict of interest statements if indeed he's</p> <p>10 taking money from plaintiffs' lawyers?</p> <p>11 MR. DEARING: Objection; form.</p> <p>12 Speculation. That's beyond the scope of this</p> <p>13 witness' expertise.</p> <p>14 And your hypothetical's wrong. He's</p> <p>15 not taking money from plaintiffs.</p> <p>16 MR. CHACHKES: If you can maybe ratchet</p> <p>17 back the speaking objections.</p> <p>18 MR. DEARING: Well, I'm talking to</p> <p>19 you.</p> <p>20 A. I don't know that that's my</p> <p>21 responsibility.</p> <p>22 Q. (BY MR. CHACHKES) Okay. It's your paper</p> <p>23 though, right?</p> <p>24 A. Yes.</p>	<p>1 A. It's possible.</p> <p>2 Q. Okay. You just don't recall?</p> <p>3 A. Yes.</p> <p>4 Q. Did plaintiffs' counsel make any</p> <p>5 suggestions as to what should be in the paper?</p> <p>6 A. Absolutely not.</p> <p>7 Q. And why do you say "absolutely not"?</p> <p>8 A. Because I know that they didn't.</p> <p>9 Q. Okay.</p> <p>10 A. To the best of my recollection.</p> <p>11 Q. So when did you start writing your expert</p> <p>12 report as opposed to the paper that we're talking</p> <p>13 about?</p> <p>14 A. I believe that was in November of last</p> <p>15 year.</p> <p>16 Q. So basically about three months ago?</p> <p>17 A. It's dated, so whatever the date was.</p> <p>18 Q. Okay. And -- well, it's dated at the date</p> <p>19 of when you finished it.</p> <p>20 When did you start writing the expert</p> <p>21 report?</p> <p>22 A. Probably a month before that. It didn't</p> <p>23 take very long to write.</p> <p>24 Q. Was your publication that we're talking</p>
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<p>1 Q. You're the lead author, right?</p> <p>2 A. Correct.</p> <p>3 Q. Okay. Do you know of anyone else who's an</p> <p>4 author is taking the money from plaintiffs for talc</p> <p>5 litigation?</p> <p>6 A. I'm not aware of any.</p> <p>7 Q. Okay. To what degree did you communicate</p> <p>8 with plaintiffs' lawyers while researching and</p> <p>9 writing this publication?</p> <p>10 MR. DEARING: Objection; vague.</p> <p>11 You don't have to disclose the content</p> <p>12 of our communications.</p> <p>13 I don't know "to what degree" means.</p> <p>14 A. I don't recall.</p> <p>15 Q. (BY MR. CHACHKES) Did they get drafts?</p> <p>16 Did plaintiffs' lawyers get drafts of your paper?</p> <p>17 A. Not that I recall, no.</p> <p>18 Q. Okay. Did you -- was there more than one</p> <p>19 phone call with the plaintiffs' counsel while you</p> <p>20 were writing this paper?</p> <p>21 A. Not that I recall.</p> <p>22 Q. Okay. So it's possible there were no</p> <p>23 phone calls with plaintiffs' counsel during the</p> <p>24 writing of this?</p>	<p>1 about completely finished before you started working</p> <p>2 on your expert report?</p> <p>3 A. Yes.</p> <p>4 Q. And prior to beginning your expert report</p> <p>5 drafting, how many times had you met plaintiffs'</p> <p>6 counsel -- any plaintiffs' counsel in person?</p> <p>7 A. Two or three.</p> <p>8 Q. Was it always Margaret and Leigh?</p> <p>9 A. Yes.</p> <p>10 Q. Okay. And where did you meet?</p> <p>11 A. Sometimes at our house.</p> <p>12 Q. "Our" meaning?</p> <p>13 A. My wife and mine.</p> <p>14 Q. Okay. How many times do you believe you</p> <p>15 met with plaintiffs' counsel at your home?</p> <p>16 A. Two or three.</p> <p>17 Q. Did you meet anywhere else? And, again,</p> <p>18 I'm -- you know, just before you started writing</p> <p>19 your expert report?</p> <p>20 A. I think we may have had lunch once at a</p> <p>21 restaurant.</p> <p>22 Q. So it's possible you've had three or four</p> <p>23 meetings with plaintiffs' counsel prior to starting</p> <p>24 to write your expert report?</p>

7 (Pages 22 to 25)



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<p>1 A. Yes.</p> <p>2 Q. And those three or four meetings were all</p> <p>3 during the period of time when you were researching</p> <p>4 and writing your publication?</p> <p>5 A. Yes.</p> <p>6 Q. And when you met, did you discuss the</p> <p>7 progress of your research on what eventually became</p> <p>8 your publication?</p> <p>9 A. I may have reported some preliminary</p> <p>10 results.</p> <p>11 Q. Did plaintiffs' counsel have any comments</p> <p>12 on those preliminary results?</p> <p>13 A. Yes.</p> <p>14 Q. What were those comments?</p> <p>15 MR. DEARING: Objection. You're</p> <p>16 getting into the content of our conversations.</p> <p>17 There's not going to be much distinction between his</p> <p>18 initial research and his ability to identify talc</p> <p>19 articles. So I'm going to argue that those</p> <p>20 conversations are privileged.</p> <p>21 MR. CHACHKES: Okay. I just want to</p> <p>22 ask a really clear question here and getting a clear</p> <p>23 objection.</p> <p>24 Q. (BY MR. CHACHKES) When you were working</p>	<p>1 A. Yes.</p> <p>2 Q. Okay. After you finished writing your</p> <p>3 publication, how many times did you meet with</p> <p>4 plaintiffs' counsel? Actually, strike that. Let me</p> <p>5 just finish up the last line of questioning.</p> <p>6 So there were three to four in-person</p> <p>7 meetings up to the point where you finished writing</p> <p>8 your publication.</p> <p>9 Were there any phone calls in</p> <p>10 addition?</p> <p>11 A. I don't think so.</p> <p>12 Q. Other than the first phone call which</p> <p>13 contacted you about this, correct?</p> <p>14 A. Correct.</p> <p>15 Q. What about e-mails?</p> <p>16 A. Some e-mail correspondence, yes.</p> <p>17 Q. Okay. Did -- were there any -- was the</p> <p>18 substance of the -- of those e-mails anything beyond</p> <p>19 logistics?</p> <p>20 MR. DEARING: We're gonna object to</p> <p>21 the content of the e-mails under privileged</p> <p>22 communications as well.</p> <p>23 Q. (BY MR. CHACHKES) Okay. Are you gonna</p> <p>24 follow the advice of counsel?</p>
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<p>1 on your publication, the one that's the centerpiece</p> <p>2 of your testimony here, you had communications with</p> <p>3 plaintiffs' counsel, you talked about your paper</p> <p>4 with plaintiffs' counsel, and they said stuff to you</p> <p>5 about your research, but you're not gonna testify to</p> <p>6 what they said to you?</p> <p>7 MR. DEARING: Objection. I don't</p> <p>8 think that's his testimony at all.</p> <p>9 MR. CHACHKES: Okay.</p> <p>10 Q. (BY MR. CHACHKES) You can answer the</p> <p>11 question.</p> <p>12 A. I don't recall extensive conversations</p> <p>13 during --</p> <p>14 Q. I'm not --</p> <p>15 A. -- during the preparation of that</p> <p>16 scientific paper.</p> <p>17 Q. I'm not asking you whether it's extensive</p> <p>18 or not. I'm just asking what the conversations</p> <p>19 were.</p> <p>20 Are you gonna testify to that?</p> <p>21 MR. DEARING: I'm gonna object. Those</p> <p>22 are privileged communications.</p> <p>23 Q. (BY MR. CHACHKES) And you're gonna follow</p> <p>24 the advice of your counsel?</p>	<p>1 A. Yes.</p> <p>2 Q. Did any e-mails with counsel address the</p> <p>3 subject matter of your publication?</p> <p>4 MR. DEARING: Same objection. You're</p> <p>5 asking for contents of e-mails.</p> <p>6 MR. CHACHKES: So you're not gonna</p> <p>7 permit him to testify about that?</p> <p>8 MR. DEARING: He's not gonna testify</p> <p>9 about any contents of communications between him and</p> <p>10 his -- and the lawyers.</p> <p>11 MR. CHACHKES: Okay.</p> <p>12 Q. (BY MR. CHACHKES) What about after you</p> <p>13 finished writing your paper and you picked up the</p> <p>14 pen for your expert report, how many times -- how</p> <p>15 many communications did you have with plaintiffs'</p> <p>16 counsel?</p> <p>17 A. A very small number. Four or five.</p> <p>18 Q. Can you describe the nature of them?</p> <p>19 Phone calls, meetings?</p> <p>20 MR. DEARING: Objection; form.</p> <p>21 I don't know what the nature of it is,</p> <p>22 but you're not obligated to disclose any of the</p> <p>23 contents of our communications.</p> <p>24 A. I may have sought advice as to format</p>

8 (Pages 26 to 29)

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<p>1 because I've never written one of these before, but</p> <p>2 nothing substantive.</p> <p>3 Q. (BY MR. CHACHKES) Of the calls or contact</p> <p>4 that you had with plaintiffs' counsel, how many --</p> <p>5 well, after you started writing your report as</p> <p>6 opposed to the publication, how many were in person,</p> <p>7 if you can recall?</p> <p>8 A. None.</p> <p>9 Q. How many were by phone?</p> <p>10 A. None.</p> <p>11 Q. Okay. So all communications with</p> <p>12 plaintiffs' counsel during the period of time where</p> <p>13 you picked up the pen to start writing your expert</p> <p>14 report as opposed to your publication were by</p> <p>15 e-mail?</p> <p>16 A. As far as I can recall, yes.</p> <p>17 Q. Okay. What about in preparation for this</p> <p>18 deposition, what'd you do to prepare?</p> <p>19 A. We had a conference call a couple of weeks</p> <p>20 ago, and I met with David and with Rick last night</p> <p>21 for a couple hours.</p> <p>22 Q. Any other preparation for this deposition?</p> <p>23 A. Well, I reviewed all the material in this</p> <p>24 binder, but no other preparation involving the</p>	<p>1 call from Beasley Allen make the connection that</p> <p>2 these were lawyers working with your wife?</p> <p>3 A. Well, let me amend that. I think they</p> <p>4 mentioned Ellen.</p> <p>5 Q. Okay. Ellen is your wife?</p> <p>6 A. Yep.</p> <p>7 Q. And it's Ellen Blair Smith?</p> <p>8 A. Correct.</p> <p>9 Q. And to the best of your knowledge, do you</p> <p>10 know whether your wife recommended you as a</p> <p>11 potential expert for this?</p> <p>12 A. Yes.</p> <p>13 Q. How so?</p> <p>14 A. Because -- because I think --</p> <p>15 MR. DEARING: I need to object here</p> <p>16 because now we're crossing over into privileged</p> <p>17 communications between the lawyers and Ms. Smith --</p> <p>18 Dr. Smith. So there may be a way you can ask him,</p> <p>19 but you've asked him to divulge privileged</p> <p>20 communications.</p> <p>21 MR. CHACHKES: So you're not gonna</p> <p>22 permit that question?</p> <p>23 MR. DEARING: I'm not gonna permit him</p> <p>24 to answer it in the way that it's posed because</p>
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<p>1 attorneys.</p> <p>2 Q. When you say "this binder," what are you</p> <p>3 referring to?</p> <p>4 A. The binder on the table.</p> <p>5 Q. Okay. Are there any other documents in</p> <p>6 that binder other than your report and the documents</p> <p>7 that are cited in your paper in your report?</p> <p>8 A. No.</p> <p>9 Q. Your wife is also an expert for plaintiffs</p> <p>10 in this case?</p> <p>11 A. Correct.</p> <p>12 Q. And how did she get involved in this case?</p> <p>13 Was it through you?</p> <p>14 A. No.</p> <p>15 Q. How?</p> <p>16 A. She was contacted by Margaret and Leigh.</p> <p>17 Q. Okay. She was contacted first or after</p> <p>18 you?</p> <p>19 A. First.</p> <p>20 Q. And when you got the call from Beasley</p> <p>21 Allen law firm, were you already familiar with who</p> <p>22 they were through your wife?</p> <p>23 A. No.</p> <p>24 Q. So you did not at the time of the first</p>	<p>1 you're asking him to divulge privileged</p> <p>2 communications.</p> <p>3 Q. (BY MR. CHACHKES) Do you know what your</p> <p>4 wife said to plaintiffs' counsel to prompt them to</p> <p>5 call you as a potential expert?</p> <p>6 A. Yes.</p> <p>7 Q. What was that?</p> <p>8 MR. DEARING: Same objection. You've</p> <p>9 asked him to divulge what plaintiffs' counsel told</p> <p>10 one of our experts. That's a privileged</p> <p>11 communication.</p> <p>12 Q. (BY MR. CHACHKES) Do you know whether</p> <p>13 plaintiffs' counsel got the idea to call you about</p> <p>14 using Raman spectroscopy for the purposes of talc</p> <p>15 litigation through your wife?</p> <p>16 A. Yes.</p> <p>17 Q. Okay. Just to be clear, because I'm not</p> <p>18 sure whether you were answering yes, do you know, or</p> <p>19 yes, that's where they got the idea, is that where</p> <p>20 they got the idea?</p> <p>21 A. Yes.</p> <p>22 Q. Is your wife -- is your wife familiar with</p> <p>23 Raman spectroscopy as a scientist?</p> <p>24 A. No.</p>

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<p>1 Q. How would she be aware of the</p> <p>2 applicability of Raman spectroscopy to the purposes</p> <p>3 of the plaintiffs' litigation?</p> <p>4 A. Would you rephrase that, please.</p> <p>5 Q. Okay. How did she know that your work</p> <p>6 might be relevant to the plaintiffs' litigation?</p> <p>7 A. I don't know the answer to that.</p> <p>8 Q. How did your wife become involved with</p> <p>9 plaintiffs' counsel to the extent you know?</p> <p>10 A. I have no idea.</p> <p>11 Q. Could have been a cold call, could have</p> <p>12 been something else?</p> <p>13 A. Yeah.</p> <p>14 Q. You and your wife don't discuss your</p> <p>15 respective work for plaintiffs?</p> <p>16 A. Correct.</p> <p>17 Q. She knows you're in a deposition today,</p> <p>18 right?</p> <p>19 A. Yes.</p> <p>20 Q. Your rate -- your -- is \$600 an hour for</p> <p>21 this work?</p> <p>22 A. Yes.</p> <p>23 Q. To date, how much have you billed?</p> <p>24 MR. DEARING: We have invoices if</p>	<p>1 believe.</p> <p>2 Q. Okay. I -- I don't want to ambush you or</p> <p>3 anything. January 3rd, it says, "Background</p> <p>4 reading." So --</p> <p>5 A. Okay.</p> <p>6 Q. I'll tell you what. I'll come back to</p> <p>7 this after a break. I'll absorb it and maybe I'll</p> <p>8 have some other questions.</p> <p>9 Is there any other compensation that</p> <p>10 you received for the purpose of this litigation</p> <p>11 other than what would be listed in Exhibit 2, which</p> <p>12 was apparently the invoices -- your invoices in this</p> <p>13 case?</p> <p>14 A. No.</p> <p>15 Q. And am I correct that all the invoice</p> <p>16 billings through about October of 2018 are going to</p> <p>17 be related to your publication rather than to your</p> <p>18 expert report?</p> <p>19 A. Yes.</p> <p>20 Q. And the entire time you were doing the</p> <p>21 underlying research for your publication and writing</p> <p>22 your publication, you were aware that this was for</p> <p>23 the purposes of plaintiffs?</p> <p>24 MR. DEARING: Objection; form.</p>
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<p>1 you'd like to see them.</p> <p>2 MR. CHACHKES: Oh, sure. Yeah. Can</p> <p>3 we just -- this is one package?</p> <p>4 MR. DEARING: Yes.</p> <p>5 MR. CHACHKES: There's no copies?</p> <p>6 Could we just mark this as Exhibit 2? You don't</p> <p>7 have any other copies?</p> <p>8 MR. DEARING: I don't.</p> <p>9 MR. CHACHKES: Okay.</p> <p>10 MR. DEARING: Sorry.</p> <p>11 MR. CHACHKES: All right.</p> <p>12 (Deposition Exhibit 2 marked for</p> <p>13 identification.)</p> <p>14 Q. (BY MR. CHACHKES) So unfortunately,</p> <p>15 there's not an extra copy.</p> <p>16 Are you familiar with the invoices</p> <p>17 that I'm holding here as Exhibit 2?</p> <p>18 A. Roughly.</p> <p>19 Q. Okay. And I see that the first invoice is</p> <p>20 January 3rd, 2017.</p> <p>21 Is that about the time you took a call</p> <p>22 from plaintiffs' counsel?</p> <p>23 A. I don't recall, but that invoice would</p> <p>24 have represented my first visit to Renishaw, I</p>	<p>1 Are you asking him if the publication?</p> <p>2 MR. CHACHKES: I think the question's</p> <p>3 clear.</p> <p>4 MR. DEARING: Well, it's not.</p> <p>5 MR. CHACHKES: Okay.</p> <p>6 Q. (BY MR. CHACHKES) If you can answer it.</p> <p>7 MR. DEARING: Can you read back the</p> <p>8 question, please?</p> <p>9 (The last question was read.)</p> <p>10 MR. DEARING: Objection; vague.</p> <p>11 A. I used the work as purely scientific</p> <p>12 research. It looked -- it felt and looked to me and</p> <p>13 I handled it like I would have handled any research</p> <p>14 project.</p> <p>15 Q. (BY MR. CHACHKES) Okay. It's not a</p> <p>16 question about bias. It's really a question about</p> <p>17 what you knew.</p> <p>18 You knew the entire time you were</p> <p>19 researching this publication that this was something</p> <p>20 the plaintiffs wanted you to do. They were paying</p> <p>21 for it and they would use it for their purposes.</p> <p>22 You knew that, right?</p> <p>23 MR. DEARING: Objection; form.</p> <p>24 Misstates the evidence.</p>

10 (Pages 34 to 37)

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<p>1 A. I can't speculate as to what purposes they</p> <p>2 had in mind.</p> <p>3 Q. (BY MR. CHACHKES) But they had a purpose</p> <p>4 in mind. Otherwise, they wouldn't have paid you,</p> <p>5 right?</p> <p>6 A. I don't know that.</p> <p>7 Q. Okay. Could have been pro bono. They</p> <p>8 could have been giving you money for no purpose</p> <p>9 whatsoever, just -- just funding the research idly?</p> <p>10 A. Can you back -- go back to the previous</p> <p>11 question as opposed to phrasing it the way you did</p> <p>12 with the pro bono business?</p> <p>13 Q. No.</p> <p>14 A. Okay. So I suppose they must have had</p> <p>15 some purpose in mind.</p> <p>16 Q. What -- in 2017, what percentage of your</p> <p>17 income was from plaintiffs' lawyers in this case?</p> <p>18 A. I don't know the answer to that. Might</p> <p>19 have been 50 percent.</p> <p>20 Q. Do you bill your travel time?</p> <p>21 A. No.</p> <p>22 Q. Did you keep lab notebooks relating to</p> <p>23 your publication?</p> <p>24 A. Yes.</p>	<p>1 Q. Did you hand those over to plaintiffs'</p> <p>2 counsel?</p> <p>3 A. No.</p> <p>4 Q. Did you ever talk with Dr. Godleski about</p> <p>5 his work for plaintiffs, what he did, how much he</p> <p>6 made?</p> <p>7 A. No.</p> <p>8 Q. Have you ever done -- prior to your work</p> <p>9 for plaintiffs' lawyers in this case, have you ever</p> <p>10 done any consulting work?</p> <p>11 A. Not that I can recall.</p> <p>12 Q. So as a professor, your only source of</p> <p>13 income has been from the University?</p> <p>14 A. So over the course of my entire career or</p> <p>15 one-time events or --</p> <p>16 Q. Let's just say for the last 10 years.</p> <p>17 A. The only source of income over the last 10</p> <p>18 years -- and it may not have been within the last 10</p> <p>19 years -- was a one-day interview with a company as a</p> <p>20 potential expert witness for which I was</p> <p>21 compensated. That never went anywhere.</p> <p>22 Q. Okay. That had nothing to do with talc or</p> <p>23 asbestos, right?</p> <p>24 A. (Nodded head.)</p>
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<p>1 Q. Do you still have those?</p> <p>2 A. Yes.</p> <p>3 Q. Are you -- did you give them to</p> <p>4 plaintiffs' lawyers?</p> <p>5 A. No.</p> <p>6 Q. So they wouldn't have been produced in</p> <p>7 this case?</p> <p>8 A. What does that mean?</p> <p>9 Q. So "produced" means when you give a</p> <p>10 document to your lawyers and the lawyers give them</p> <p>11 to the other side. That's what "produced" means.</p> <p>12 A. I have not given them my notebooks.</p> <p>13 Q. Okay. Is there any other written material</p> <p>14 that reflects the work you did underlying the</p> <p>15 public- -- your publication?</p> <p>16 A. No.</p> <p>17 Q. Did you have e-mails with your</p> <p>18 collaborators on the paper regarding the subject</p> <p>19 matter of this?</p> <p>20 A. Yes. The subject matter of my paper?</p> <p>21 Q. Of your paper, yes.</p> <p>22 A. Yes.</p> <p>23 Q. Okay. Frequent e-mails?</p> <p>24 A. Reasonably frequent, yes.</p>	<p>1 Q. You have to answer out loud.</p> <p>2 A. Sorry. This is new to me.</p> <p>3 Q. Yes.</p> <p>4 A. No. It had nothing to do with it.</p> <p>5 Q. Okay. In the conflict of interest</p> <p>6 disclosure --</p> <p>7 A. Oh. Let me first say something that I had</p> <p>8 forgotten about. I am the co-author of a textbook,</p> <p>9 so I was compensated for that.</p> <p>10 Q. Okay. In the conflict of interest</p> <p>11 statement in your publication, it says, "Served as</p> <p>12 consultant and provided expert testimony in talc and</p> <p>13 other environmental litigation."</p> <p>14 Do you know what that phrase "and</p> <p>15 other environmental litigation" refers to?</p> <p>16 A. That would be for Dr. Godleski.</p> <p>17 Q. Okay. And regarding the textbook, that's</p> <p>18 the one that's Principles of Modern Chemistry?</p> <p>19 A. Yes.</p> <p>20 Q. And the seventh edition was published in</p> <p>21 2011?</p> <p>22 A. Correct.</p> <p>23 Q. Okay. And there's a more recent edition,</p> <p>24 correct?</p>

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<p>1 A. Correct.</p> <p>2 Q. And you're not an author on that one?</p> <p>3 A. That's correct.</p> <p>4 Q. And why aren't you an author on the more</p> <p>5 recent one?</p> <p>6 A. Because I was not good at keeping up with</p> <p>7 deadlines.</p> <p>8 Q. Were you fired?</p> <p>9 A. If you want to call it that.</p> <p>10 Q. Well, what -- what do you call it?</p> <p>11 A. I was fired.</p> <p>12 Q. Okay. And did you write particular</p> <p>13 chapters or did you write the whole thing?</p> <p>14 A. This was a major revision of the fifth</p> <p>15 edition, so I started with the sixth edition and</p> <p>16 then continued with the seventh edition. It was a</p> <p>17 complete restructuring of the order of the textbook.</p> <p>18 My co-author, Pat Gillis, and I worked</p> <p>19 together a lot. Professor Oxtoby is president of</p> <p>20 Pomona College and does not have time to work on</p> <p>21 that. He gave us an initial guidance, but Pat and I</p> <p>22 worked on the textbook together. It's a lot of</p> <p>23 work. I'll never do one again.</p> <p>24 Q. Do you stand behind the scientific</p>	<p>1 report is 2009?</p> <p>2 A. Correct.</p> <p>3 Q. What explains the nine-year -- the last</p> <p>4 nine years you've published only one paper?</p> <p>5 A. I basically lost interest in doing</p> <p>6 research. I've been doing it for a long time.</p> <p>7 Q. Focusing exclusively on teaching?</p> <p>8 A. Exclusively on teaching and also on</p> <p>9 curriculum innovation. I spent three to five years</p> <p>10 creating a new junior/senior level focal chemistry</p> <p>11 laboratory which was revolutionary, and that's</p> <p>12 something I'm very proud of.</p> <p>13 Q. How would you describe your discipline?</p> <p>14 Are you a physical chemist? Is that what you are?</p> <p>15 A. My degree is actually in chemical physics.</p> <p>16 There's a subtle distinction there. Chemical</p> <p>17 physics grew out of quantum mechanics and</p> <p>18 spectroscopy, and physical chemists -- chemistry</p> <p>19 grew out of thermodynamics and electrochemistry, so</p> <p>20 I think of myself as a molecular spectroscopist.</p> <p>21 Q. Okay. Is it fair to say you won't be</p> <p>22 offering an opinion on disease causation related to</p> <p>23 the plaintiffs in these cases?</p> <p>24 A. I'm not an expert in that area, so I don't</p>
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<p>1 statements made in the textbook?</p> <p>2 A. Absolutely.</p> <p>3 Q. Okay. They're all pretty fundamental,</p> <p>4 basic principles of science that are all beyond</p> <p>5 dispute?</p> <p>6 A. Yes.</p> <p>7 Q. Okay. You've published over 130 articles?</p> <p>8 A. Correct.</p> <p>9 Q. Any of them -- what are the sources of</p> <p>10 funding for those articles?</p> <p>11 A. Oh, gosh. Primarily the National Science</p> <p>12 Foundation, the Welch Foundation, Air Force grant,</p> <p>13 Semiconductor Research Corporation. That's -- those</p> <p>14 are -- those are the only ones I can recall.</p> <p>15 Q. Okay. Do any of those -- any of your</p> <p>16 published articles -- putting aside the one attached</p> <p>17 to your report, do any of those address asbestos or</p> <p>18 talc?</p> <p>19 A. No.</p> <p>20 Q. In any way whatsoever do they address</p> <p>21 asbestos or talc?</p> <p>22 A. None.</p> <p>23 Q. If I'm reading your CV correctly, the last</p> <p>24 publication prior to this publication past your</p>	<p>1 know how I could.</p> <p>2 Q. Okay. Do you plan on giving an opinion on</p> <p>3 general causation?</p> <p>4 A. I'm not an expert.</p> <p>5 Q. Okay. You're not a medical doctor,</p> <p>6 correct?</p> <p>7 A. That's correct.</p> <p>8 Q. Okay. And you're not qualified to testify</p> <p>9 to potential sources of injuries of plaintiffs in</p> <p>10 these actions?</p> <p>11 A. No.</p> <p>12 MR. DEARING: Objection; form.</p> <p>13 Q. (BY MR. CHACKES) You're not a</p> <p>14 mineralogist?</p> <p>15 A. No.</p> <p>16 Q. For any bottle of J&amp;J talc-based product,</p> <p>17 you're not qualified to opine on whether it contains</p> <p>18 asbestos or not?</p> <p>19 MR. DEARING: Objection; form.</p> <p>20 A. Would you repeat the question, please.</p> <p>21 Q. (BY MR. CHACKES) Sure. For any bottle</p> <p>22 of J&amp;J talc-based product, you're not qualified to</p> <p>23 opine on whether or not it contains asbestos,</p> <p>24 correct?</p>

12 (Pages 42 to 45)

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<p>1 A. Not without having the opportunity to</p> <p>2 study it, I suppose.</p> <p>3 Q. Okay. And have you ever studied a bottle</p> <p>4 of J&amp;J talc-based products?</p> <p>5 A. We have taken spectrum.</p> <p>6 Q. Okay. I'll come back to that.</p> <p>7 Do you know, sitting here today,</p> <p>8 whether any historical or current bottle of J&amp;J</p> <p>9 talc-based product contains asbestos?</p> <p>10 A. I have no personal knowledge of that.</p> <p>11 Q. Okay. It's not your testimony today that</p> <p>12 J&amp;J talc-based products contain asbestos, is it?</p> <p>13 A. No.</p> <p>14 Q. You're not a geologist, are you?</p> <p>15 A. No.</p> <p>16 Q. Are you qualified to opine on whether a</p> <p>17 min- -- a mineral is an asbestiform habit versus</p> <p>18 nonasbestiform habit?</p> <p>19 A. No.</p> <p>20 Q. Do you even know what that means,</p> <p>21 "asbestiform habit"?</p> <p>22 A. Just what I've read in the literature, per</p> <p>23 se.</p> <p>24 Q. What you've read in the literature since</p>	<p>1 A. No.</p> <p>2 Q. Okay. Do you consider yourself an expert</p> <p>3 in any of the forms of electron microscopy?</p> <p>4 A. No.</p> <p>5 Q. What about XRD?</p> <p>6 A. No.</p> <p>7 Q. What about PLM?</p> <p>8 A. Polarized light microscopy?</p> <p>9 Q. Correct.</p> <p>10 A. I learned a great deal from Dr. Godleski.</p> <p>11 I would not -- I would not say I'm an expert --</p> <p>12 Q. Okay.</p> <p>13 A. -- but I can recognize particles.</p> <p>14 Q. Okay. That knowledge has come since the</p> <p>15 plaintiffs contacted you for the purposes of this</p> <p>16 case, correct?</p> <p>17 A. Partially correct.</p> <p>18 Q. Okay. To what degree is that not correct?</p> <p>19 A. We -- we used polarized light microscopy</p> <p>20 while I was a graduate student to orient single</p> <p>21 crystals and identify particular crystal graphic</p> <p>22 axes in organic crystals that we were studying.</p> <p>23 Q. Okay. Have you ever used a PLM device to</p> <p>24 look at inorganic material?</p>
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<p>1 you've been contacted by plaintiffs' lawyers?</p> <p>2 A. Yes.</p> <p>3 Q. You're not an industrial hygienist?</p> <p>4 A. No.</p> <p>5 Q. You're not a toxicologist?</p> <p>6 A. No.</p> <p>7 Q. Not an epidemiologist?</p> <p>8 A. No.</p> <p>9 Q. You're not a pathologist?</p> <p>10 A. No.</p> <p>11 Q. You're a person who does Raman</p> <p>12 spectroscopy?</p> <p>13 A. Correct.</p> <p>14 Q. Okay. Do you have other experience in</p> <p>15 analy- -- analytical microscopy other than Raman</p> <p>16 spectroscopy?</p> <p>17 A. Can you define analytical microscopy?</p> <p>18 Q. What other microscopes, beyond a Raman</p> <p>19 spectro- -- spectrographic instrument, would you</p> <p>20 feel you're an expert in?</p> <p>21 A. As part of the physical chemistry</p> <p>22 laboratory, I feel like I'm pretty qualified in</p> <p>23 fluorescence microscopy.</p> <p>24 Q. Any other device?</p>	<p>1 A. Well, that's how we identify the particles</p> <p>2 before we do the Raman spectroscopy, sure.</p> <p>3 Q. Okay. Other than work you did -- when you</p> <p>4 say "we," did you do that work --</p> <p>5 A. Dr. Godleski and I together.</p> <p>6 Q. Okay.</p> <p>7 A. Side-by-side.</p> <p>8 Q. Okay. So you worked side-by-side when the</p> <p>9 PLM was being operated?</p> <p>10 A. Yes. Most of the time.</p> <p>11 Q. Okay. Did you fly to Boston to do that</p> <p>12 work with him?</p> <p>13 A. I think I made two trips to Boston, and</p> <p>14 then he's made several trips to Renishaw where we</p> <p>15 worked together.</p> <p>16 Q. Okay. And where is Renishaw physically</p> <p>17 located?</p> <p>18 A. In Elgin, Illinois.</p> <p>19 Q. So you made several trips to Elgin,</p> <p>20 Illinois, for the purposes of this case?</p> <p>21 A. Correct.</p> <p>22 Q. Do you have -- other than your work for</p> <p>23 the purposes of this case and your work as a</p> <p>24 graduate student, have you ever operated a PLM?</p>

13 (Pages 46 to 49)



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<p>1 A. No.</p> <p>2 Q. Have you ever analyzed asbestos under any</p> <p>3 scientific instrument?</p> <p>4 A. No.</p> <p>5 Q. So you would say you have zero experience</p> <p>6 doing that?</p> <p>7 A. Correct.</p> <p>8 Q. Prior to this case, had you ever looked at</p> <p>9 talc through Raman spectroscopy?</p> <p>10 A. No.</p> <p>11 Q. Prior to this case, had you ever looked at</p> <p>12 any mineral through Raman spectroscopy?</p> <p>13 A. I'm trying to think of whether silicon</p> <p>14 should be considered a mineral or not. Silicon is</p> <p>15 an element. Most of my work with Raman microscopy</p> <p>16 has been done on silicon and silicon germanium</p> <p>17 alloys.</p> <p>18 Q. Okay. Probably a metal, not a mineral?</p> <p>19 A. No, it's a semiconductor.</p> <p>20 Q. Okay. But not a mineral?</p> <p>21 A. Not a mineral.</p> <p>22 Q. Okay. Are you familiar with silicate</p> <p>23 minerals?</p> <p>24 A. In general.</p>	<p>1 different very small quantities of impurity metals</p> <p>2 that may affect the exact positions.</p> <p>3 Q. Okay. Are you aware there are different</p> <p>4 grades of talc?</p> <p>5 A. No.</p> <p>6 Q. So if I ask you to tell me what the</p> <p>7 different grades of talc are, you couldn't tell me?</p> <p>8 A. No.</p> <p>9 Q. Do you know whether the Raman spectra for</p> <p>10 different grades of talc would be different?</p> <p>11 A. No.</p> <p>12 Q. Are you familiar with asbestiform</p> <p>13 minerals?</p> <p>14 A. No.</p> <p>15 Q. Are you familiar with the criteria for</p> <p>16 identifying what are asbestiform minerals versus</p> <p>17 nonasbestiform?</p> <p>18 A. No.</p> <p>19 Q. Is talc an asbestiform mineral?</p> <p>20 A. If I'm not aware of their criteria, how</p> <p>21 could I answer that question?</p> <p>22 Q. Are asbestiform minerals silicas?</p> <p>23 A. I don't know.</p> <p>24 Q. Do you know how many groups of asbestiform</p>
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<p>1 Q. What do you mean by "in general"?</p> <p>2 A. From the background reading that I've</p> <p>3 done. I would not consider myself an expert.</p> <p>4 Q. Okay. When you say "the background</p> <p>5 reading," you mean the background reading for the</p> <p>6 purposes of this case?</p> <p>7 A. Correct. For the purposes of the research</p> <p>8 that we did --</p> <p>9 Q. Okay.</p> <p>10 A. -- for the publication.</p> <p>11 Q. Okay. Can you give me an example of</p> <p>12 silicate mineral?</p> <p>13 A. Talc.</p> <p>14 Q. Can you give me another example?</p> <p>15 A. There's so many. Let's see, brucite. I</p> <p>16 just don't know off the top of my head. I'd have to</p> <p>17 look at the briefing book to refresh my memory.</p> <p>18 Q. Do you know the chemical formula for talc?</p> <p>19 A. Let's see, Si3 -- no MG3Si4010(OH)2.</p> <p>20 Q. Do you know whether the Raman spectra for</p> <p>21 talc from different locations would differ?</p> <p>22 A. Yes.</p> <p>23 Q. And why is that?</p> <p>24 A. As far as I'm able to ascertain, there are</p>	<p>1 minerals there are?</p> <p>2 A. No.</p> <p>3 Q. Do you know the mineral morphology</p> <p>4 categories for asbestos?</p> <p>5 A. No.</p> <p>6 Q. Do you know the difference between</p> <p>7 serpentine and amphibole asbestos?</p> <p>8 A. No.</p> <p>9 Q. Have you heard of those distinctions</p> <p>10 before?</p> <p>11 A. Yes.</p> <p>12 Q. Something you saw in -- for the purpose of</p> <p>13 this case -- getting ready for this case?</p> <p>14 A. Yes.</p> <p>15 Q. Okay. Can you tell me the challenges in</p> <p>16 Raman spectroscopy that exist as between detecting</p> <p>17 serpentine and amphibole minerals?</p> <p>18 A. I can't tell you in detail.</p> <p>19 Q. Okay.</p> <p>20 A. I could make some general comments about</p> <p>21 the challenges of identifying minerals of these</p> <p>22 classes.</p> <p>23 Q. Do you know what those classes are?</p> <p>24 A. No. I mean, minerals in general, sorry.</p>

14 (Pages 50 to 53)



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<p>1 Q. Okay. So you couldn't tell me the</p> <p>2 difference challenges specifically between detecting</p> <p>3 serpentine and amphibole?</p> <p>4 A. No.</p> <p>5 Q. Have you done any tests to determine the</p> <p>6 challenges of distinguishing serpentine and</p> <p>7 amphibole minerals?</p> <p>8 A. No.</p> <p>9 Q. And you've -- you've never run a Raman</p> <p>10 spectroscopy test on asbestos, correct?</p> <p>11 A. Correct.</p> <p>12 Q. Is it within your area of expertise to</p> <p>13 testify as to the chemical formula of certain</p> <p>14 asbestiform mineral species?</p> <p>15 A. No.</p> <p>16 Q. Do you know how many regulated asbestiform</p> <p>17 mineral species there are?</p> <p>18 A. No.</p> <p>19 Q. And you don't know whether the Raman</p> <p>20 spectr- -- spectrograph for these minerals would</p> <p>21 differ?</p> <p>22 A. I mean, there are published Raman spectra</p> <p>23 of asbestiform minerals, some of which I included in</p> <p>24 these references. So people have clearly identified</p>	<p>1 profiles?</p> <p>2 A. Can you help me understand what you mean</p> <p>3 by "similar"?</p> <p>4 Q. Meaning, you couldn't tell the difference</p> <p>5 between two separate minerals because the Raman</p> <p>6 spectroscopy profiles look the same.</p> <p>7 A. I would say that the Raman spectra of</p> <p>8 minerals are as unique as fingerprints.</p> <p>9 Q. Okay. Even if two different minerals have</p> <p>10 the -- essentially the same chemical profile?</p> <p>11 A. Correct.</p> <p>12 Q. Okay. Are you aware of any -- you -- but</p> <p>13 you have never done research in that regard,</p> <p>14 correct?</p> <p>15 A. Correct.</p> <p>16 Q. Are you aware of any research in that</p> <p>17 regard?</p> <p>18 A. Well, there's one paper I included in this</p> <p>19 packet, which shows how Raman spectra of these fiber</p> <p>20 silicates differ and have unique signatures.</p> <p>21 Q. So if I were to show you two different</p> <p>22 minerals that have nearly identical Raman</p> <p>23 spectroscopy, you would doubt that that's real</p> <p>24 science?</p>
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<p>1 them using Raman microscopy, I haven't.</p> <p>2 Q. Would you consider yourself an expert in</p> <p>3 identifying asbestos using Raman spectroscopy?</p> <p>4 A. No.</p> <p>5 Q. Do you know whether the chemical formula</p> <p>6 of a mineral is the same if the mineral is an</p> <p>7 asbestiform versus nonasbestiform?</p> <p>8 A. No.</p> <p>9 Q. Do you know whether Raman spectroscopy can</p> <p>10 tell the difference between an asbestiform and</p> <p>11 nonasbestiform version of the same mineral?</p> <p>12 A. No.</p> <p>13 Q. Are you aware of any studies in that</p> <p>14 regard?</p> <p>15 A. No.</p> <p>16 Q. And you certainly haven't done any?</p> <p>17 A. No.</p> <p>18 Q. Am I correct that there are a great number</p> <p>19 of mineral species that have similar Raman</p> <p>20 spectroscopy profiles?</p> <p>21 A. Could you phrase that question a little</p> <p>22 more precisely, please?</p> <p>23 Q. Am I correct that there are different</p> <p>24 minerals that have similar Raman spectroscopy</p>	<p>1 A. Say that again, please.</p> <p>2 Q. So if I were to show you that the Raman</p> <p>3 spectr- -- spectroscopy profile of two separate</p> <p>4 minerals look the same, you would doubt that.</p> <p>5 That that's actual science?</p> <p>6 A. I would doubt that.</p> <p>7 Q. Okay. You -- in your paper, you don't do</p> <p>8 any identification of minerals using Raman</p> <p>9 spectroscopy, right, of minerals other than talc?</p> <p>10 A. Only talc.</p> <p>11 Q. Okay. Do you want to take a break or are</p> <p>12 you good? Are you okay?</p> <p>13 MR. DEARING: I'm good.</p> <p>14 THE WITNESS: I'm fine.</p> <p>15 MR. CHACHKES: Okay, great.</p> <p>16 Q. (BY MR. CHACHKES) So you -- in your</p> <p>17 expert report, you have a list of materials you</p> <p>18 relied on, correct?</p> <p>19 A. Correct.</p> <p>20 Q. I'm looking at the last page and</p> <p>21 there's 11 documents, correct?</p> <p>22 A. May I refer to them?</p> <p>23 Q. Oh, please. Yes, you've got it actually</p> <p>24 right there.</p>

15 (Pages 54 to 57)

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<p>1 A. Oh, sorry.</p> <p>2 (Examined exhibit.) Yes.</p> <p>3 Q. Okay. Which of these were provided to you</p> <p>4 from plaintiffs' counsel, if any?</p> <p>5 A. Number 11.</p> <p>6 Q. Okay. For Numbers 1 through 10, you</p> <p>7 selected them, you found them for your purposes?</p> <p>8 A. Correct.</p> <p>9 Q. Okay. Why were you provided Number 11,</p> <p>10 which is the expert report of Dr. Godleski?</p> <p>11 A. I presume because he included some of our</p> <p>12 Raman results in his report.</p> <p>13 Q. Okay. So in that report, one would find</p> <p>14 results that come straight out of the paper that's</p> <p>15 attached to your expert report?</p> <p>16 A. I don't know. He asked me to send him</p> <p>17 some additional spectra, which I did.</p> <p>18 Q. Okay. What did you send him?</p> <p>19 A. I can't remember what the particle names</p> <p>20 or numbers were.</p> <p>21 Q. Were they talc?</p> <p>22 A. Oh, yeah.</p> <p>23 Q. Okay. When you say particle names or</p> <p>24 numbers, does different talc have different names</p>	<p>1 A. Yes.</p> <p>2 Q. Is it fair to say you've never had a talc</p> <p>3 sample in your laboratory other than those provided</p> <p>4 by Dr. Godleski?</p> <p>5 A. I believe that the Renishaw guys may have</p> <p>6 taken some baby powder samples themselves and looked</p> <p>7 at them. I don't believe I was involved in that.</p> <p>8 Q. Okay. But that was not in your</p> <p>9 laboratory?</p> <p>10 A. Let's -- let me clarify this. When you</p> <p>11 say "my laboratory," okay, I don't have a</p> <p>12 laboratory. All of this work was done at the</p> <p>13 rock -- at the Renishaw facility in Chicago.</p> <p>14 Q. Okay. So is -- is all your Raman</p> <p>15 spectroscopy equipment -- or to the extent you have</p> <p>16 access to Raman spectroscopy -- spectroscopy</p> <p>17 equipment, it's all in -- at Renishaw in Illinois?</p> <p>18 A. Correct.</p> <p>19 Q. Okay. Have you ever had a Raman -- piece</p> <p>20 of Raman spectroscopy equipment at the University?</p> <p>21 A. Oh, yes, many different types. Some I</p> <p>22 constructed myself for specialized purposes.</p> <p>23 I had a commercial Renishaw instrument</p> <p>24 which was, I believe, the first one of the new model</p>
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<p>1 and numbers?</p> <p>2 A. This is a complicated issue.</p> <p>3 Q. Okay.</p> <p>4 A. He has his numbering system. I have my</p> <p>5 numbering system.</p> <p>6 Q. Okay. What's your numbering system?</p> <p>7 A. Particle 1. Particle 2. Slide X.</p> <p>8 Q. Okay. How many different talc samples are</p> <p>9 you in possession of?</p> <p>10 A. I'm not in possession of any.</p> <p>11 Q. Okay. How is it you have a numbering</p> <p>12 system for talc and you don't possess any?</p> <p>13 A. At -- at the time we took the data.</p> <p>14 Q. Okay.</p> <p>15 A. That's all.</p> <p>16 Q. So you had talc samples and then you got</p> <p>17 rid of them?</p> <p>18 A. Gave them back to Dr. Godleski. They were</p> <p>19 his samples.</p> <p>20 Q. Okay. All the talc that you looked at in</p> <p>21 your laboratory came from Dr. Godleski?</p> <p>22 A. Yes.</p> <p>23 Q. And all the pathology samples, did those</p> <p>24 also come from Dr. Godleski?</p>	<p>1 that they currently manufacture. It's probably</p> <p>2 close to 20 years old.</p> <p>3 Q. Do you have a laboratory now at the</p> <p>4 University?</p> <p>5 A. I do not.</p> <p>6 Q. Okay. When was the last time you had a</p> <p>7 laboratory at the University?</p> <p>8 A. Probably at the time of that last</p> <p>9 publication that you cited, something like that.</p> <p>10 Q. Was there some sort of -- kind of official</p> <p>11 closing of your laboratory?</p> <p>12 A. Yes.</p> <p>13 Q. And how -- how did that play out?</p> <p>14 A. Well, it was pretty easy. We were</p> <p>15 renovating the building and they said get all your</p> <p>16 equipment out of here.</p> <p>17 Q. Okay. The University didn't say, "Do you</p> <p>18 want to establish a laboratory somewhere else or</p> <p>19 reestablish it after the renovation?"</p> <p>20 A. We talked about it, but there was nothing</p> <p>21 I was particularly passionate about doing. So if</p> <p>22 there were a problem that piqued my interest, I</p> <p>23 would have likely kept the equipment and tried to</p> <p>24 move in different directions, but there was simply</p>

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<p>1 nothing that was sufficiently interesting for me to</p> <p>2 pursue at that time.</p> <p>3 Q. Okay. So the decision to close your</p> <p>4 laboratory and all the reasons to close your</p> <p>5 laboratory are entirely things you've just</p> <p>6 discussed, basically, your decision?</p> <p>7 A. Yes.</p> <p>8 Q. Okay. So fair to say since 2009 you've</p> <p>9 had no equipment related to Raman spectroscopy other</p> <p>10 than what you had access to at Renishaw?</p> <p>11 A. We have a small Raman spectrometer in the</p> <p>12 physical chemistry laboratory, but that's used for</p> <p>13 teaching purposes.</p> <p>14 Q. Okay. And so the equipment that you</p> <p>15 talked about before that you had at the University,</p> <p>16 that was all pre-2009?</p> <p>17 A. Yes. That was purchased in 2002 and it</p> <p>18 was part of my laboratory while I was doing the work</p> <p>19 on the strains silicon.</p> <p>20 And when that work ended and I didn't</p> <p>21 have funding to continue to support that instrument,</p> <p>22 I transferred it to a UT Center. It's called the</p> <p>23 Texas Materials Institute, and they have custody of</p> <p>24 that instrument and they maintain it.</p>	<p>1 transcripts?</p> <p>2 A. Not that I recall.</p> <p>3 Q. Okay. Have you ever met any plaintiffs in</p> <p>4 the various talc litigation?</p> <p>5 A. No.</p> <p>6 Q. Could you name one?</p> <p>7 A. Well, I guess Brower.</p> <p>8 Q. And you're looking at?</p> <p>9 A. Number 11.</p> <p>10 Q. Okay. Number 11, meaning you know the</p> <p>11 name of Brower because it's in the expert report</p> <p>12 that Dr. Godleski gave you?</p> <p>13 A. Correct.</p> <p>14 Q. Okay. Can you name any other plaintiff?</p> <p>15 A. No.</p> <p>16 Q. Have you ever reviewed any medical records</p> <p>17 relating to those cases?</p> <p>18 A. No.</p> <p>19 Q. It's fair to say that you have no current</p> <p>20 intention to testify to specific plaintiffs in any</p> <p>21 of these talc litigations?</p> <p>22 MR. DEARING: Objection; form.</p> <p>23 Speculation.</p> <p>24 A. (No response.)</p>
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<p>1 Q. Okay. You did not attend -- there was an</p> <p>2 international Raman spectroscopy conference last</p> <p>3 year you didn't attend?</p> <p>4 A. No.</p> <p>5 Q. Okay. When was the last time you attended</p> <p>6 that conference, what year?</p> <p>7 A. Wow, maybe 2000.</p> <p>8 Q. Is the fact that you're not going to those</p> <p>9 conferences anymore, is that tied up in your</p> <p>10 decision not to do any more research?</p> <p>11 A. Yes.</p> <p>12 Q. Okay. Do you want to elaborate?</p> <p>13 A. They're very big conferences. I don't</p> <p>14 generally like to go to very big conferences.</p> <p>15 Q. Okay. Did you review any depositions</p> <p>16 relating to this case?</p> <p>17 A. Pardon me?</p> <p>18 Q. Like deposition transcripts. You know at</p> <p>19 the end of this deposition there will be a</p> <p>20 transcript of what you said and what I said.</p> <p>21 You're aware of that, right?</p> <p>22 A. Yes.</p> <p>23 Q. Okay. So that's a deposition transcript.</p> <p>24 Have you reviewed any other deposition</p>	<p>1 Q. (BY MR. CHACHKES) Can you answer that</p> <p>2 question?</p> <p>3 A. Would you repeat the question.</p> <p>4 MR. CHACHKES: Would you mind</p> <p>5 repeating the question.</p> <p>6 (The last question was read.)</p> <p>7 A. Is it fair to say . . . I have no current</p> <p>8 intention to testify.</p> <p>9 I have to think about when you say "is</p> <p>10 it fair to say," that's a tricky way of phrasing</p> <p>11 that question for me.</p> <p>12 Q. (BY MR. CHACHKES) You have no intention</p> <p>13 to testify to any particular plaintiff?</p> <p>14 A. Correct.</p> <p>15 Q. Okay. Do you have any intention to</p> <p>16 testify regarding any particular talc based product?</p> <p>17 A. No.</p> <p>18 Q. If you would turn to Exhibit 1, which is</p> <p>19 your expert report, on page 6, you have a -- sort of</p> <p>20 a summary in the last couple of paragraphs.</p> <p>21 Do you see that?</p> <p>22 A. (Examined exhibit.) Yes.</p> <p>23 Q. And in the second paragraph it reads,</p> <p>24 "Raman spectro-" -- you wrote, "Raman spectroscopy</p>

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<p style="text-align: right;">Page 66</p> <p>1 is a reliable and unambiguous method for identifying</p> <p>2 talc and asbestos bodies in human tissue as well as</p> <p>3 inorganic materials," correct?</p> <p>4 A. Correct.</p> <p>5 Q. And that's your opinion in this case?</p> <p>6 A. Yes.</p> <p>7 Q. You opine that Raman spectroscopy is</p> <p>8 reliable for identifying asbestos bodies yet you've</p> <p>9 never done any work identifying asbestos bodies with</p> <p>10 Raman spectroscopy?</p> <p>11 A. That's correct.</p> <p>12 Q. And you're not aware of the particular</p> <p>13 challenges that may or may not exist in different --</p> <p>14 identifying different kinds of asbestos or different</p> <p>15 asbestiform versions of the same mineral?</p> <p>16 A. I'm not aware of specific challenges.</p> <p>17 Q. And that's because you did no research</p> <p>18 whatsoever in that regard?</p> <p>19 A. Correct.</p> <p>20 Q. Do you have any intention to proffer an</p> <p>21 opinion other than what's generally summarized in</p> <p>22 those two paragraphs?</p> <p>23 A. Proffer an opinion to whom?</p> <p>24 Q. Well, an opinion in this case.</p>	<p style="text-align: right;">Page 68</p> <p>1 pathology slides that Dr. Godleski got?</p> <p>2 A. Correct.</p> <p>3 Q. Other than those two human tissue samples</p> <p>4 that I just mentioned, have you ever -- have you</p> <p>5 ever looked at human tissue with Raman spectroscopy?</p> <p>6 A. No.</p> <p>7 Q. So what's listed in your paper is the</p> <p>8 first time you ever looked at human tissue using</p> <p>9 Raman spectroscopy?</p> <p>10 A. Correct.</p> <p>11 Q. And it's the first time you identified</p> <p>12 talc using Raman spectroscopy?</p> <p>13 A. Correct.</p> <p>14 Q. And you've never identified asbestos using</p> <p>15 Raman spectroscopy?</p> <p>16 A. Correct.</p> <p>17 Q. So the method for identifying talc in your</p> <p>18 publication was something you and the co-authors</p> <p>19 invented?</p> <p>20 A. What do you mean by "the method"?</p> <p>21 Q. So in your publication, there's a way to</p> <p>22 identify -- it shows how to identify talc in human</p> <p>23 tissue, correct?</p> <p>24 A. I'm still not sure what you're getting at.</p>
<p style="text-align: right;">Page 67</p> <p>1 So your expert report's an opinion,</p> <p>2 right? You realize that?</p> <p>3 A. Yes.</p> <p>4 Q. Okay. On a high level, what you're</p> <p>5 testifying to is summarized in those two paragraphs,</p> <p>6 correct?</p> <p>7 A. Yes, on a high level.</p> <p>8 Q. Okay. And then on a specific level, it's</p> <p>9 really all about the research you've done in your</p> <p>10 paper?</p> <p>11 A. Correct.</p> <p>12 Q. You don't have an opinion regarding the</p> <p>13 potential causes of ovarian cancer, right?</p> <p>14 A. No.</p> <p>15 Q. And you don't have an opinion regarding</p> <p>16 the potential causes of mesothelioma, correct?</p> <p>17 A. Correct.</p> <p>18 Q. In your publication, you identify talc in</p> <p>19 three separate samples, correct?</p> <p>20 A. Correct.</p> <p>21 Q. One is something you doped, meaning, you</p> <p>22 put the talc in yourself?</p> <p>23 A. Dr. Godleski put the talc in himself.</p> <p>24 Q. Okay. One -- and the other two are</p>	<p style="text-align: right;">Page 69</p> <p>1 Q. Okay. What's confusing about my question?</p> <p>2 A. Could you rephrase it?</p> <p>3 Q. It would be helpful if you could tell me</p> <p>4 what's confusing and then I could rephrase it</p> <p>5 accordingly.</p> <p>6 A. I'm not quite sure what you mean by</p> <p>7 "method." I mean, we took the Raman spectrum. We</p> <p>8 compared the Raman spectrum with the Raman spectra</p> <p>9 of known talc samples from multiple databases and</p> <p>10 they matched.</p> <p>11 Q. Would you call that -- you wouldn't call</p> <p>12 that "method." Would you call it "methodology"?</p> <p>13 Would you -- what would you -- what</p> <p>14 word or phrase would you use to kind of summarize</p> <p>15 the way of doing that that is in your paper?</p> <p>16 A. I would say we used Raman spectroscopy as</p> <p>17 an analytical technique to identify talc.</p> <p>18 Q. Is this disclosure of a way of using Raman</p> <p>19 spectroscopy to identify talc in tissue the first</p> <p>20 such publication to do so?</p> <p>21 A. No.</p> <p>22 Q. Okay. Is this way of identifying talc in</p> <p>23 human tissue that's in your paper something that</p> <p>24 anybody reasonably competent in Raman spectroscopy</p>

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<p>1 could do or use?</p> <p>2 A. Yes.</p> <p>3 Q. Who else, to the best of your knowledge,</p> <p>4 has used Raman spectroscopy to identify talc in</p> <p>5 human tissue?</p> <p>6 A. No one other than in the literature cited.</p> <p>7 Q. Okay. And who is that?</p> <p>8 A. May I look at this?</p> <p>9 Q. Please.</p> <p>10 A. (Examined document.) I'm still not used</p> <p>11 to the organization of this.</p> <p>12 Q. So just -- just for the record, the binder</p> <p>13 you have is basically the -- I guess is the</p> <p>14 references that you list on the last page of your</p> <p>15 expert report?</p> <p>16 A. Um-hum.</p> <p>17 Q. Does that include the Godleski expert</p> <p>18 report?</p> <p>19 A. In here?</p> <p>20 Q. Yeah.</p> <p>21 A. Yes.</p> <p>22 Q. Okay.</p> <p>23 A. So References 3, 4, and 5 are the ones</p> <p>24 that I know about that I could think of off the top</p>	<p>1 look them up.</p> <p>2 Q. Okay. Going to your paper -- just</p> <p>3 returning to your paper, not your expert report, but</p> <p>4 your paper -- can you just generally, going author</p> <p>5 by author, tell me what each author contributed to</p> <p>6 this paper?</p> <p>7 A. Well, we know what I did.</p> <p>8 Ken Smith was the Raman microscopy</p> <p>9 expert at Renishaw.</p> <p>10 I believe Dr. Fan is the electron</p> <p>11 microscopist.</p> <p>12 And so I just don't recall.</p> <p>13 Potentially, I may have been the one who developed</p> <p>14 the cell line.</p> <p>15 And I don't recall what Gregory did.</p> <p>16 These were all long-time collaborators</p> <p>17 of Dr. Godleski, and so he was the one that wanted</p> <p>18 them to be co-authors.</p> <p>19 Q. By the way, the version of this paper</p> <p>20 that's attached to your report is the just accepted</p> <p>21 version, correct?</p> <p>22 A. Correct.</p> <p>23 Q. And now there's a published version,</p> <p>24 correct?</p>
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<p>1 of my head of people that look at talc.</p> <p>2 Q. Okay. So your testimony is that the</p> <p>3 Larkin paper, the Pence paper, and the Toporski</p> <p>4 paper each disclose the identification of talc in</p> <p>5 human tissue?</p> <p>6 A. I'm sorry. I'm not sure that we're</p> <p>7 looking at the same thing.</p> <p>8 Q. So -- oh, we may not be. My -- my 3, 4,</p> <p>9 and 5 are Larkin, Jansen and --</p> <p>10 A. Well --</p> <p>11 Q. I'm looking at your Materials Considered.</p> <p>12 A. I'm looking at the beginning of my expert</p> <p>13 report, "Relevant Literature Review," on page 3.</p> <p>14 Q. My apologies. Okay. Let me rephrase</p> <p>15 that.</p> <p>16 So you're saying that in the de Mul</p> <p>17 paper --</p> <p>18 A. Yes.</p> <p>19 Q. -- in the Rinaudo paper, and in the Musa</p> <p>20 paper, each of those disclose the identification of</p> <p>21 talc in human tissue?</p> <p>22 A. Correct.</p> <p>23 Q. Okay. You're sure about it?</p> <p>24 A. Yes. You have the papers if we need to</p>	<p>1 A. Yes.</p> <p>2 Q. And is that identical to the just accepted</p> <p>3 version I'm looking at?</p> <p>4 A. As far as I can tell.</p> <p>5 Q. And it's published in what journal?</p> <p>6 A. Analytical Chemistry.</p> <p>7 Q. And it's peer-reviewed?</p> <p>8 A. Oh, yes. Absolutely.</p> <p>9 Q. Okay. Are there any parts of your paper</p> <p>10 that you cannot confirm its accuracy because one of</p> <p>11 your co-authors was responsible for that piece?</p> <p>12 A. I certainly can't say anything about the</p> <p>13 cell lines or that -- that sort of stuff.</p> <p>14 Q. When you say "about the cell lines,"</p> <p>15 meaning what?</p> <p>16 A. Why that particular cell line of</p> <p>17 RAW 264.7. You know, I don't know anything about</p> <p>18 that.</p> <p>19 Q. Any other part that you're --</p> <p>20 A. No.</p> <p>21 Q. So other than maybe the nature of in the</p> <p>22 category of the cell lines, you stand behind every</p> <p>23 sentence of your publication based on your personal</p> <p>24 knowledge?</p>

19 (Pages 70 to 73)

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<p>1 A. So I don't have any personal knowledge of</p> <p>2 model systems, cells, particles, assay. I wasn't</p> <p>3 there when those things were prepared, so I can't</p> <p>4 testify to that.</p> <p>5 I also wasn't there when Godleski</p> <p>6 prepared the particles and tissues, but I certainly</p> <p>7 was there when we looked at the pathology slides.</p> <p>8 Okay. So I would say everything from</p> <p>9 Raman microscopy on down I'm quite confident in.</p> <p>10 Q. When you say "Raman spectroscopy" --</p> <p>11 A. Yeah. They did a funny formatting here.</p> <p>12 So if you look at page 3, line 11 --</p> <p>13 Q. Okay.</p> <p>14 A. -- I think they cleaned that up in the</p> <p>15 final version of the paper.</p> <p>16 Q. Got it.</p> <p>17 Okay. So you're personally familiar</p> <p>18 with all the work and the conclusions and the</p> <p>19 science in -- starting on page 3 where it says</p> <p>20 "Raman microscopy" and everything after, correct?</p> <p>21 A. Correct.</p> <p>22 Q. And that was all worked on at Renishaw?</p> <p>23 A. Correct.</p> <p>24 Q. Why did Godleski come to Renishaw when the</p>	<p>1 Q. Okay. The talc that Dr. Godleski put into</p> <p>2 the cells, do you know what the source of that talc</p> <p>3 was?</p> <p>4 A. Yeah. It's identified in the paper. That</p> <p>5 it was reagent grade talc from Aldrich CAS Registry</p> <p>6 Number 14 on the box. It's on page 2 -- top of</p> <p>7 page 2.</p> <p>8 Q. Okay. And do you know what grade that</p> <p>9 talc is?</p> <p>10 A. I believe it was reagent grade, but I</p> <p>11 don't know for sure.</p> <p>12 Q. Okay. And that's because you're not</p> <p>13 familiar with the grading of talc?</p> <p>14 A. Yes.</p> <p>15 Q. And the -- do you know what mines that J&amp;J</p> <p>16 used for its talc?</p> <p>17 A. I have no idea.</p> <p>18 Q. Do you know what mines the talc used to</p> <p>19 dope the RAW cells in your paper came from?</p> <p>20 A. I don't know that Sigma -- is it</p> <p>21 Sigma-Aldrich? Yeah, I don't know that Sigma</p> <p>22 identifies the source of their talc. In fact, it</p> <p>23 could very well be synthetic.</p> <p>24 Q. You're not offering an opinion in this</p>
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<p>1 Raman spectroscopy was done?</p> <p>2 A. Why was he there?</p> <p>3 Q. Yeah, why was he there?</p> <p>4 A. I think in part just to teach me. I mean,</p> <p>5 I'm not a pathologist, right, so I didn't know what</p> <p>6 to look for.</p> <p>7 Q. So the RAW?</p> <p>8 264.7 macrophage cell line, that's the li -- that's</p> <p>9 the cell line that was doped?</p> <p>10 A. Correct.</p> <p>11 Q. And that's not a human cell, correct?</p> <p>12 A. I believe I looked it up and I believe</p> <p>13 it's a mouse cell line; but beyond that, I can't</p> <p>14 say.</p> <p>15 Q. Okay. I have a note that it's a mouse,</p> <p>16 Abelson murine leukemia virus-induced tumor cell.</p> <p>17 A. I actually did take the time to look at</p> <p>18 the TACC catalog, and they have 24,000 cell lines</p> <p>19 developed since 1925, and that's the extent of my</p> <p>20 knowledge.</p> <p>21 Q. Okay. The talc used to dope that cell</p> <p>22 line -- well, first of all, did you do the doping or</p> <p>23 did Godleski?</p> <p>24 A. Dr. Godleski did it.</p>	<p>1 case on the Raman spectra of J&amp;J talc, are you?</p> <p>2 A. No.</p> <p>3 Q. You also looked at human tissue, correct?</p> <p>4 A. Yes.</p> <p>5 Q. One was from cystology slides of a patient</p> <p>6 who had undergone talc pleurodesis, correct?</p> <p>7 A. Correct.</p> <p>8 Q. Okay. You -- do you understand what talc</p> <p>9 pleurodesis is, generally?</p> <p>10 A. Only in the vaguest possible way.</p> <p>11 Q. Okay. Deliberately putting talc on a --</p> <p>12 A. Right.</p> <p>13 Q. -- into the tissue of a human being?</p> <p>14 A. Right.</p> <p>15 Q. Okay.</p> <p>16 MR. DEARING: Can I interrupt you?</p> <p>17 When you get to a pausing place, can</p> <p>18 we take a break?</p> <p>19 MR. CHACHKES: Yeah, we can pause</p> <p>20 here. That's fine.</p> <p>21 MR. DEARING: I didn't mean to</p> <p>22 interrupt you.</p> <p>23 MR. CHACHKES: Unless you think I'm on</p> <p>24 a roll, I'm gonna --</p>

20 (Pages 74 to 77)



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<p>1 MR. DEARING: I just had a really</p> <p>2 large cup of coffee.</p> <p>3 THE VIDEOGRAPHER: Going off the</p> <p>4 record. The time is 10:37 a.m.</p> <p>5 (A recess was taken from 10:37 a.m.</p> <p>6 to 10:54 a.m.)</p> <p>7 THE VIDEOGRAPHER: This marks the</p> <p>8 beginning of disk 2, back on the record. The time</p> <p>9 is 10:54 a.m.</p> <p>10 Q. (BY MR. CHACHKES) Okay. We were talking</p> <p>11 about the doped mouse cells when we took a break.</p> <p>12 Do you recall that?</p> <p>13 A. Yes.</p> <p>14 Q. Okay. And for the purposes of the paper,</p> <p>15 did you confirm the presence of talc using other</p> <p>16 techniques other than Raman spectroscopy for those</p> <p>17 mouse cells?</p> <p>18 A. No.</p> <p>19 Q. For the talc pleurodesis patient pathology</p> <p>20 slide that originally came from Brigham and Young's</p> <p>21 Women Hospital -- Women's Hospital [sic], correct?</p> <p>22 A. If that's what we said in the paper, yes.</p> <p>23 Q. Okay. And that was procured by</p> <p>24 Dr. Godleski?</p>	<p>1 Q. Okay. Do you know where Dr. Godleski's</p> <p>2 knowledge came from?</p> <p>3 A. I don't have any personal knowledge other</p> <p>4 than what's in this ex- -- expert report.</p> <p>5 Q. Okay. Do you know whether that slide --</p> <p>6 I'm gonna make a distinction between somebody who</p> <p>7 uses talc -- uses perineal talc -- perineal talc and</p> <p>8 because of it has talc in their cells or somebody</p> <p>9 who uses perineal talc and happens to have talc in</p> <p>10 their cells.</p> <p>11 Do you understand that distinction?</p> <p>12 A. Correlation versus causality?</p> <p>13 Q. Well, so you would -- would you agree that</p> <p>14 just because somebody uses talc doesn't mean that</p> <p>15 the talc found in their cells got there through that</p> <p>16 use?</p> <p>17 MR. DEARING: Objection to form.</p> <p>18 Beyond the scope of his expertise.</p> <p>19 A. I can't comment on that.</p> <p>20 Q. (BY MR. CHACHKES) Okay. And you can't</p> <p>21 comment on whether the perineal talc sample in your</p> <p>22 paper reflects talc that was in the cells because of</p> <p>23 the perineal use or somebody that was using perineal</p> <p>24 talc and just happened to have talc in their cells?</p>
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<p>1 A. Yes.</p> <p>2 Q. And then the remaining human tissue slide,</p> <p>3 that third one came -- that was a patient who had</p> <p>4 reported using perineal -- perineal talc, correct?</p> <p>5 A. Correct.</p> <p>6 Q. And it was ovarian tissue in that slide?</p> <p>7 A. Correct.</p> <p>8 Q. Do you know which cells in the ovary for</p> <p>9 that slide?</p> <p>10 A. No. That's outside my area of expertise.</p> <p>11 Q. Okay. Do you know how the talc got into</p> <p>12 that sample?</p> <p>13 A. Well, as we said in the paper, it was just</p> <p>14 perineal use of talcum powder.</p> <p>15 Q. So you know that the talc that was in that</p> <p>16 sample came through perineal use and not some other</p> <p>17 method?</p> <p>18 A. That's what Dr. Godleski test --</p> <p>19 specified --</p> <p>20 Q. Okay.</p> <p>21 A. -- or testified to.</p> <p>22 Q. Your only knowledge in this regard came</p> <p>23 from Dr. Godleski?</p> <p>24 A. Oh, absolutely. Yeah.</p>	<p>1 A. That's outside my area of expertise.</p> <p>2 Q. Okay. And do you have any knowledge of</p> <p>3 what one would expect to find in terms of talc in</p> <p>4 one's cells as a baseline, without the use of talc?</p> <p>5 A. I have absolutely no idea.</p> <p>6 Q. Okay. And you don't know whether the talc</p> <p>7 in those peri- -- ovarian cells that you looked at</p> <p>8 was above the baseline or below the baseline?</p> <p>9 MR. DEARING: Objection to form.</p> <p>10 A. I -- I have no idea.</p> <p>11 Q. (BY MR. CHACHKES) Okay. And do you know</p> <p>12 whether that talc -- those cells came from an area</p> <p>13 of, for example, tumor in the ovaries?</p> <p>14 A. I was told by Dr. Godleski that that</p> <p>15 sample was from tissue adjacent to tumor, but that's</p> <p>16 the extent of my knowledge. That's what he told me.</p> <p>17 Q. Do you know whether it came from an area</p> <p>18 of consolidation?</p> <p>19 A. I don't know what that means.</p> <p>20 Q. Do you know whether it came from an area</p> <p>21 of congestion?</p> <p>22 A. Don't know what that means.</p> <p>23 Q. Okay. And the fact that the patient from</p> <p>24 whom these cells came from had a history of perineal</p>

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<p>1 talc use, how does Dr. Godleski know that?</p> <p>2 A. I don't know.</p> <p>3 Q. And is there anything I can look at in</p> <p>4 your report or in the paper that tells me the degree</p> <p>5 of use for those -- for that patient that is the use</p> <p>6 of perineal talc?</p> <p>7 A. That's certainly not something I would</p> <p>8 know and I don't know if he put that in the front of</p> <p>9 his report.</p> <p>10 Q. The -- was the presence of talc in the</p> <p>11 human tissue that you looked at confirmed by other</p> <p>12 techniques other than Raman spectroscopy?</p> <p>13 A. Yes. I think in -- in his report he used</p> <p>14 SEM/EDS.</p> <p>15 Q. When you say "his report," what do you</p> <p>16 mean by that?</p> <p>17 A. This is the Brower report that's in -- in</p> <p>18 the book here.</p> <p>19 Q. Okay. So you're saying that the presence</p> <p>20 of talc in the same slides you looked at in your</p> <p>21 publication were the ones that Dr. Godleski had</p> <p>22 looked at in that expert report that you referred to</p> <p>23 in your materials considered?</p> <p>24 A. I don't know that they were the same</p>	<p>1 laser on to do a Raman spectrum --</p> <p>2 Q. Okay.</p> <p>3 A. -- of that particle.</p> <p>4 Q. So the PLM is necessary to hone in on the</p> <p>5 particle you're gonna look at with Raman</p> <p>6 spectroscopy?</p> <p>7 A. Correct.</p> <p>8 Q. And the PLM work was done by Dr. Godleski?</p> <p>9 A. The Renishaw microscope is equipped with</p> <p>10 polarizing optics.</p> <p>11 Q. Okay.</p> <p>12 A. So we could do both the Raman and the PLM</p> <p>13 in the same instrument.</p> <p>14 Q. Okay. So the PLM aspect of the -- that</p> <p>15 PLM work, was that done by you or was that done by</p> <p>16 Dr. Godleski?</p> <p>17 A. Sometimes we did it together. Sometimes I</p> <p>18 did it on my own.</p> <p>19 Q. Okay. Had you done this kind of PLM work</p> <p>20 as a -- sort of a setup to doing the Raman work</p> <p>21 before, prior to this paper?</p> <p>22 A. No.</p> <p>23 Q. Who taught you how to do the PLM aspect?</p> <p>24 A. Dr. Godleski.</p>
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<p>1 slides. I actually doubt that they were the same</p> <p>2 slides because you have to prepare these slides</p> <p>3 differently for microscopy than you do for SEM/EDS.</p> <p>4 Q. Okay. In your paper, do you disclose</p> <p>5 confirming the presence of talc in your -- the human</p> <p>6 tissue slides through any other method other than</p> <p>7 Raman spectroscopy?</p> <p>8 A. I don't believe so.</p> <p>9 Q. In this section on page 2 that begins</p> <p>10 "Particles in tissues," it reads, "Histology slides</p> <p>11 of a patient with known exposure to talc from a talc</p> <p>12 pleurodesis procedure from Brigham and Women's</p> <p>13 Hospital and from patients with exposure by way of</p> <p>14 perineal use of talc from several other hospitals</p> <p>15 was assessed" --</p> <p>16 A. Um-hum.</p> <p>17 Q. -- "by polarized light microscopy."</p> <p>18 Do you see that?</p> <p>19 A. Yep.</p> <p>20 Q. Does that mean the two slides that you</p> <p>21 looked at were assessed by PLM?</p> <p>22 A. Yes, we do PLM and Raman microscopy</p> <p>23 simultaneously. So we identify a particle using</p> <p>24 polarized light microscopy, and then we shine the</p>	<p>1 Q. Do you know whether the human tissue that</p> <p>2 you looked at in your publication was from</p> <p>3 plaintiffs who were individuals in talc litigation?</p> <p>4 A. I don't know.</p> <p>5 Q. Do you -- and you don't know where -- what</p> <p>6 mines the talc in those human tissue slides came</p> <p>7 from, correct?</p> <p>8 A. Correct.</p> <p>9 Q. And you don't know the source, like</p> <p>10 whether it came from J&amp;J or Cal- -- or Colgate or</p> <p>11 whether it's some industrial grade from a laboratory</p> <p>12 supply? You don't know the source of that talc</p> <p>13 either, do you?</p> <p>14 A. No.</p> <p>15 Q. In that part of your paper that I pointed</p> <p>16 you to, the particle in tissues, it suggests that</p> <p>17 there were multiple perineal use tissue slides that</p> <p>18 you looked at; is that correct?</p> <p>19 A. I believe we looked at two slides.</p> <p>20 Q. Okay. And for the talc pleurodesis</p> <p>21 slides, did you look at just one or is there more</p> <p>22 than one?</p> <p>23 A. I can't recall. We may have looked at</p> <p>24 more than one.</p>

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<p>1 Q. Okay. But you only report on one of each</p> <p>2 in your paper, correct?</p> <p>3 A. Yes, each of these figures was from one</p> <p>4 slide.</p> <p>5 Q. Why don't you report on the other slides</p> <p>6 that you looked at?</p> <p>7 A. So our purpose here was simply to</p> <p>8 demonstrate that we could identify talc in tissue</p> <p>9 unambiguously. So we felt that if we demonstrated</p> <p>10 that conclusively and unambiguously then that's all</p> <p>11 we needed for this research project.</p> <p>12 And there are also time and resource</p> <p>13 constraints. So Renishaw's demo instruments are not</p> <p>14 available all the time, and we had sometimes one</p> <p>15 day, sometimes two days. So we did as much as we</p> <p>16 could in the time available.</p> <p>17 Q. But the results you had on those</p> <p>18 unreported-on slides were consistent with the</p> <p>19 reported-on slides?</p> <p>20 A. I can't recall, but I -- I don't recall --</p> <p>21 I don't recall any on anomalies. Let's put it that</p> <p>22 way.</p> <p>23 Q. The reference Raman spectrum that you</p> <p>24 used, those came from an online laboratory from the</p>	<p>1 Q. And you state that confidently?</p> <p>2 A. Um-hum.</p> <p>3 Q. Okay. What is the percentage of amphibole</p> <p>4 minerals that have been tested to find the Raman</p> <p>5 spectrum?</p> <p>6 A. I don't -- I'm not sure that I know what</p> <p>7 an amphibole is.</p> <p>8 Q. Okay. What advantage does Raman</p> <p>9 spectroscopy have over the other methods in the past</p> <p>10 that people have used to identify minerals in human</p> <p>11 tissue?</p> <p>12 A. Methods such as?</p> <p>13 Q. Do you know of any meth- -- what were</p> <p>14 people doing before --</p> <p>15 A. Well, electron microscopy with energy-</p> <p>16 dispersive spectroscopy I believe was the standard</p> <p>17 method.</p> <p>18 Q. Okay. What advantage --</p> <p>19 A. There --</p> <p>20 Q. Sorry. I didn't mean to interrupt.</p> <p>21 A. No, that's all right.</p> <p>22 There was -- there are, or is at least</p> <p>23 one report of someone doing infrared spectroscopy,</p> <p>24 but it's not widely used, as far as I can tell, for</p>
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<p>1 online -- strike that.</p> <p>2 The reference spectrum that you used</p> <p>3 came from an online library at the Geology</p> <p>4 Laboratory of Leon?</p> <p>5 A. Correct.</p> <p>6 Q. Have you used that online library before?</p> <p>7 A. Not before this project.</p> <p>8 Q. Okay. That's because it's a mineral</p> <p>9 database and you don't do minerals?</p> <p>10 A. Correct.</p> <p>11 Q. Did you search that database to see what</p> <p>12 other minerals had Raman spectroscopy similar to</p> <p>13 talc?</p> <p>14 A. Yes. We pointed that out in the paper.</p> <p>15 Q. Okay. And you found none?</p> <p>16 A. None.</p> <p>17 Q. Okay. Did you -- what work did you do to</p> <p>18 see whether there were any unreported-on minerals</p> <p>19 that have similar Raman spectra to talc?</p> <p>20 A. What do you mean by "unreported-on"?</p> <p>21 Q. So, for example, minerals that have nearly</p> <p>22 identical chemistries to talc might have similar</p> <p>23 spectra, right?</p> <p>24 A. No.</p>	<p>1 this purpose.</p> <p>2 Q. What advantage does electron microscopy</p> <p>3 have over Raman spectroscopy for those purposes and</p> <p>4 vice versa?</p> <p>5 A. So electron microscopy has higher spatial</p> <p>6 resolution. So if I remember correctly, a typical</p> <p>7 electron microscope can resolve objects to a size of</p> <p>8 about 10 nanometers.</p> <p>9 Raman microscopy being an optical</p> <p>10 technique has a resolution limit roughly equivalent</p> <p>11 to the wavelength of the light use, so about</p> <p>12 1 micron.</p> <p>13 So the advantages of electron</p> <p>14 microscopy are greater spatial resolution. The</p> <p>15 advantages of Raman microscopy is much more</p> <p>16 information about chemical composition and the</p> <p>17 arrangement of the atoms in the mineral structure.</p> <p>18 Q. Any other respective advantages,</p> <p>19 disadvantages?</p> <p>20 A. Not that I can think of.</p> <p>21 Q. Is one cheaper to use than the other?</p> <p>22 A. Oh, that's for sure. Raman is much</p> <p>23 cheaper.</p> <p>24 Q. Okay.</p>

23 (Pages 86 to 89)

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<p>1 A. We're talking a couple hundred thousand 2 versus maybe a couple million. 3 Q. Meaning, the instruments? 4 A. Yeah, the instruments. 5 Q. Okay. What about actually running the 6 experiments, once you have the instrument as a sum 7 cost, or whether one is cheaper than the other? 8 A. Since I haven't done electron microscopy 9 myself, I don't know how much time it takes. Just 10 from talking to John and from reading this paper, I 11 think sample preparation is pretty elaborate for 12 electron microscopy, and sample preparation is 13 nonexistent for Raman microscopy. You take the 14 slide, you put in the instrument, and you push a 15 button. 16 Q. Any other respective advantages, 17 disadvantages in any way whatsoever? 18 A. Not that I can think of. 19 Q. Okay. What about versus infrared? 20 A. So in infrared spectroscopy, as I 21 mentioned, the -- sorry. 22 In spectroscopies involving 23 electromagnetic radiation, which include infrared 24 and visible light, the resolution is set by the</p>	<p>1 Q. Okay. And then elec- -- the EM is about 2 10 times better than -- 3 A. I think it's 100 times better. 4 Q. Oh, 100 times better? 5 A. Yeah. 6 Q. Than Raman spectroscopy? 7 A. Yeah. 8 Q. Okay. If I wanted to precisely 9 characterize the mineral I was looking at in human 10 tissue, electron microscopy would be better than 11 Raman spectroscopy because I have 100 times better 12 resolution, correct? 13 A. I don't know what you mean by "precisely." 14 Q. If my identification of the mineral 15 depended on seeing it really well, electron 16 microscopy would be better than Raman spectroscopy, 17 correct? 18 MR. DEARING: Objection; form. 19 A. If your interest was in examining the 20 morphology of the particle, yes. If your interest 21 was in characterizing the chemical composition and 22 crystal structure, no. 23 Q. (BY MR. CHACHKES) If I wanted to know 24 more about the particle in human tissue beyond</p>
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<p>1 wavelength of the radiation, and so the spot size 2 would be, let's say, a micron at 532, which is the 3 wavelength we used, and, let's see, if we went out 4 to 1064, which is in the near-infrared, you would 5 lose resolution by a factor of 2. 6 I'm trying to think of an infrared 7 frequency. I could do a back of the envelope, if 8 you want. 9 But let's just say that for the 10 infrared technique spatial resolution is probably in 11 the order of 20 microns. 12 Q. Okay. So . . . 13 A. So if you wanted to look at a particle, 14 for example, embedded in tissue, it would be very 15 difficult to discriminate the signature of the 16 particle from that of the surrounding tissue. All 17 right. I'm looking at a 5-micron particle in a 18 20-micron field of view. 19 Q. Okay. So roughly, when comparing 20 resolution, Raman spectroscopy is about 20 times 21 better than infrared and then EM -- 22 A. Let's say 10 times better. 23 Q. In the range of 10 times better? 24 A. Yeah.</p>	<p>1 chemical composition and crystal structure, and that 2 was provided by electron microscopy, I would want to 3 use electron microscopy, right? 4 MR. DEARING: Objection; form. 5 A. If you wanted to learn something about 6 morphology, yes. 7 Q. (BY MR. CHACHKES) Why didn't you use 8 X-ray diffraction? 9 A. Well, I'm not sure you can get an X-ray 10 diffraction pattern from a 5-micron particle. 11 Q. Okay. What about -- why isn't PLM alone 12 sufficient to characterize a mineral in the tissue 13 sample? 14 A. It doesn't tell you anything about the 15 chemical composition or the arrangement of the atoms 16 in the lattice. 17 Q. What about scanning electron microscopy? 18 A. Scanning electron microscopy doesn't tell 19 you anything about the structure and arrangement of 20 the atoms in the particle. 21 Q. In your article -- I could point you to 22 this, but you write, "The Raman signal intensity 23 depends upon the size and orientation of a talc 24 particle"; is that right?</p>

24 (Pages 90 to 93)

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<p>1 A. Correct.</p> <p>2 Q. What do you mean by that?</p> <p>3 A. This is a little tricky. So the Raman</p> <p>4 signal depends upon the flexibility or the</p> <p>5 polarizability or the ease with which electrons are</p> <p>6 distorted in the presence of the electric field of</p> <p>7 the laser.</p> <p>8 And so if I can use a metaphor.</p> <p>9 Imagine a crystal as a football and let's just</p> <p>10 pretend that it's easier to slosh electrons back and</p> <p>11 forth along the long axis as opposed to the short</p> <p>12 axis.</p> <p>13 So far so good?</p> <p>14 Q. So far so good.</p> <p>15 A. Okay. So if the football was lying in the</p> <p>16 plane of a microscope slide and the laser field</p> <p>17 is -- the electric field of the laser is polarized</p> <p>18 in that plane, then we would see a larger intensity</p> <p>19 for that orientation than for that orientation</p> <p>20 (demonstrating).</p> <p>21 Q. Okay. Some orientations are more</p> <p>22 conducive to inelastic electron scattering than</p> <p>23 other orientations?</p> <p>24 A. I don't know what you mean by "more</p>	<p>1 that to the talc size to the talc particle.</p> <p>2 A. And that depends entirely on the</p> <p>3 circumstances. I can't generalize that, okay,</p> <p>4 because the Raman intensity is proportional to the</p> <p>5 volume of the particle. Okay? And so as the</p> <p>6 particles get smaller, the intensity decreases, and</p> <p>7 then it's just a question of how much the intensity</p> <p>8 of the adjacent material compares to the adjacent --</p> <p>9 to the talc particle that I'm interested in.</p> <p>10 Q. Okay. Do you have -- and so you're saying</p> <p>11 human tissue is such that you -- you can't sort of</p> <p>12 generalize the noise created by the human tissue</p> <p>13 surrounding a talc particle?</p> <p>14 A. That's correct.</p> <p>15 And we pointed that out in the article</p> <p>16 because even to the eye tissue structures are</p> <p>17 inhomogeneous, right? So you might have lymph, you</p> <p>18 might have collagen, you might have all proteins.</p> <p>19 You have all kinds of stuff there, and it varies</p> <p>20 from location to location of the tissue sample. So</p> <p>21 it just matters where the talc is and what's around</p> <p>22 the talc.</p> <p>23 Q. If you're looking at a Raman spectrum, how</p> <p>24 do you know the signal-to-noise has become a problem</p>
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<p>1 conducive to."</p> <p>2 Q. You get more of a signal?</p> <p>3 A. Correct.</p> <p>4 Q. Okay. Is there a minimum size that's</p> <p>5 required of the mineral to get an accurate Raman</p> <p>6 spectrum reading for talc?</p> <p>7 A. That depends upon the specific conditions.</p> <p>8 I'm trying to be precise here.</p> <p>9 The issue is always the</p> <p>10 signal-to-noise ratio. In other words, what does</p> <p>11 the signal look like relative to the background. So</p> <p>12 if you see -- well, I'll just draw it.</p> <p>13 (Demonstrating.)</p> <p>14 If you see something like that, okay,</p> <p>15 you might say that that's a peak, right?</p> <p>16 Q. Okay.</p> <p>17 A. But if you see something like this, that's</p> <p>18 pretty hard to say that there's a peak there.</p> <p>19 And so it's always a question of the</p> <p>20 signal and the background from the surrounding</p> <p>21 medium from the detector, from all sorts of things.</p> <p>22 Q. Okay. And when is -- when is the</p> <p>23 signal-to-noise going to be an issue, and when is it</p> <p>24 not going to be an issue? And if you could relate</p>	<p>1 versus, "Well, maybe I haven't found talc"?</p> <p>2 A. Can you rephrase that? I'm not quite sure</p> <p>3 what you're getting at there.</p> <p>4 Q. Well, if I'm looking at a sample and I</p> <p>5 haven't already assumed there's talc in it, how do I</p> <p>6 know the difference between the spectrum I'm looking</p> <p>7 at, "Oh, I found that there is no talc," versus, "I</p> <p>8 don't know because the signal-to-noise ratio is too</p> <p>9 great" -- I mean, "too small"?</p> <p>10 A. Well, if I don't see a peak, right, then I</p> <p>11 can't say anything about what's being sampled.</p> <p>12 Q. Is there a possibility that there is a</p> <p>13 peak, it's just buried in noise?</p> <p>14 A. Sure. That's what we're talking about</p> <p>15 with signal-to-noise ratio.</p> <p>16 Q. Right. And how do I know -- so how do I</p> <p>17 know -- if I've got two Raman spectroscopy readouts,</p> <p>18 how do I know whether, oh, well, this one is -- the</p> <p>19 signal-to-noise is too great but maybe talc is in</p> <p>20 there versus, oh, talc's not in there?</p> <p>21 A. Well, if the signal-to-noise ratio is</p> <p>22 great, then you'll see it.</p> <p>23 I think maybe what you meant was if</p> <p>24 the signal-to-noise ratio is too small.</p>

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<p style="text-align: right;">Page 98</p> <p>1 Q. Too small, correct.</p> <p>2 A. Yeah.</p> <p>3 Q. Yeah.</p> <p>4 A. Yeah. Then you can't say anything. If</p> <p>5 you can't see signal above noise, then you can't say</p> <p>6 anything.</p> <p>7 Q. Okay. Is there a maximum size of the</p> <p>8 mineral particle above which you might not get an</p> <p>9 accurate Raman reading?</p> <p>10 A. I don't understand that question.</p> <p>11 Q. Is there a point where the mineral</p> <p>12 particle is too big to use Raman spectroscopy?</p> <p>13 A. I am virtually certain that you could use</p> <p>14 it to -- no, I'm certain that you could use it to</p> <p>15 look up macroscopic, okay, crystals. I mean,</p> <p>16 millimeters, centimeters. Right.</p> <p>17 Q. Okay. Do you have any opinion regarding</p> <p>18 the advantages of electron microscopes over Raman</p> <p>19 spectroscopy when it comes to very small particles?</p> <p>20 A. If you're interested in morphology,</p> <p>21 electron microscopy has the advantage.</p> <p>22 If you're interested in chemical</p> <p>23 composition and crystal structure or molecular</p> <p>24 structure, then Raman microscopy has the advantage.</p>	<p style="text-align: right;">Page 100</p> <p>1 Does that seem right?</p> <p>2 A. If you've added it up, that's correct.</p> <p>3 Q. Okay. And do you have any idea why the</p> <p>4 plaintiffs thought it was worth \$190,000 to fund</p> <p>5 this paper?</p> <p>6 MR. DEARING: Objection; form.</p> <p>7 Speculation.</p> <p>8 A. I have no idea.</p> <p>9 Q. (BY MR. CHACHKES) Do you have any idea</p> <p>10 why plaintiffs think this could be a better method</p> <p>11 for them than electron microscopy?</p> <p>12 MR. DEARING: Objection; form.</p> <p>13 Speculation.</p> <p>14 A. I'm not sure what you mean by that</p> <p>15 question. I mean, that's -- that's for them to</p> <p>16 decide, not for me to decide.</p> <p>17 Q. (BY MR. CHACHKES) I'm not talking</p> <p>18 about -- I'm talking about what you know.</p> <p>19 What did they tell you?</p> <p>20 A. I've made the case that this is a</p> <p>21 technique which is unambiguous. That seems to be an</p> <p>22 attractive feature of the technique to them.</p> <p>23 Q. And better than electron microscopy?</p> <p>24 MR. DEARING: Objection; form.</p>
<p style="text-align: right;">Page 99</p> <p>1 Q. Okay. My question was more related to the</p> <p>2 signal-to-noise issue.</p> <p>3 Is there such -- would there be a case</p> <p>4 in which you have a poor signal-to-noise under Raman</p> <p>5 spectroscopy but you could resolve the question of</p> <p>6 whether talc is there under electron microscopy?</p> <p>7 A. I am not an expert in signal-to-noise</p> <p>8 considerations for electron microscopy, so I can't</p> <p>9 comment to that.</p> <p>10 Q. I want to talk about the funding for this</p> <p>11 paper. If you -- I've looked at your invoice, which</p> <p>12 is -- invoices, which is what's labeled as</p> <p>13 Exhibit 2, and you see that it's billing from</p> <p>14 January 3rd, 2017, through the end of June 2018.</p> <p>15 Does that ring a bell?</p> <p>16 A. Yes.</p> <p>17 Q. Okay. So am I correct that what's</p> <p>18 Exhibit 2, the invoice, is -- from the very</p> <p>19 beginning of 2017 to the end of June of 2018, is the</p> <p>20 entirety of what you billed doing the work relating</p> <p>21 to the paper?</p> <p>22 A. Yes.</p> <p>23 Q. And I've added it up and it's over</p> <p>24 \$190,000.</p>	<p style="text-align: right;">Page 101</p> <p>1 You don't have to disclose any</p> <p>2 contents of any conversations that we've had.</p> <p>3 THE WITNESS: Okay.</p> <p>4 Q. (BY MR. CHACHKES) So did the plaintiffs</p> <p>5 tell you whether they believe Raman spectroscopy for</p> <p>6 the purposes of identifying minerals in tissue</p> <p>7 samples is better than electron microscopy?</p> <p>8 MR. DEARING: Same objection.</p> <p>9 A. They would have no basis on which to make</p> <p>10 that judgment.</p> <p>11 Q. (BY MR. CHACHKES) Why do you say that?</p> <p>12 A. Because I'm the expert.</p> <p>13 Q. So it seems like a matter of common sense</p> <p>14 if I'm paying \$190,000 for something I want to get</p> <p>15 something out of it.</p> <p>16 What are the plaintiffs getting out of</p> <p>17 it?</p> <p>18 MR. DEARING: Objection; speculation.</p> <p>19 Q. (BY MR. CHACHKES) You can speculate. If</p> <p>20 you think that they're just sort of in a pro bono</p> <p>21 way funding research, you can say that. But if you</p> <p>22 think there's another reason, I'd like to know.</p> <p>23 A. I would be guessing.</p> <p>24 Q. All right. Guess.</p>

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<p>1 MR. DEARING: If you know the answer, 2 you can say the answer. 3 A. Okay. So my guess is that they are 4 thinking that this technique might be more 5 unambiguous than other established techniques. 6 Q. (BY MR. CHACHKES) And at any time when 7 you were communicating with them, did you convey 8 that thought that this was going to be more 9 unambiguous than established techniques for using 10 for looking for minerals in tissue samples? 11 A. I conveyed that in the paper and we've had 12 several conversations where I came to the conclusion 13 that this technique is unambiguous. 14 Q. So more unambiguous than prior techniques? 15 A. Unambiguous is superlative. It can't be 16 more unambiguous. 17 Q. Okay. Well, there are other things to 18 know about particles other than structure and -- 19 crystalline structure and -- what was the other 20 aspect? 21 A. Chemical composition. 22 Q. Yeah. There's more to know about a 23 mineral than chemical composition and crystalline 24 structure, isn't there, or you don't know?</p>	<p>1 A. Renishaw did not bill me for instrument 2 time for much of the work. We made an arrangement 3 for, I think, the last three days we were up there 4 to pay them, I think, \$5,000 a day. 5 Q. And that money came from plaintiffs' 6 lawyers? 7 A. Yes. 8 Q. Other than the \$5,000 a day that you just 9 testified to, did the plaintiffs' lawyers pay 10 Renishaw anything? 11 A. No. 12 Q. What was Renishaw's interest in allowing 13 you to use their equipment prior to that free? 14 A. So this will likely, or at least I hope, 15 turn out to be a collaboration for the future 16 because they independently have decided that putting 17 their instruments in pathology labs for particle 18 identification is a good business opportunity for 19 them. 20 And so this is a collaboration where I 21 could help them figure out parameters, test 22 hypotheses. So we've had a good working 23 relationship for many years, and so we viewed this 24 as a collaboration initially.</p>
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<p>1 A. I'm not an expert in that area, but if -- 2 if I may, I was tasked to identify talc. That was 3 my task. And the technique that we've developed 4 identifies talc unambiguously with complete 5 certainty. I have no doubt whatsoever that this 6 method identifies talc, and that was the scope of 7 work. 8 Q. And prior methods prior to your method did 9 not unambiguously identify talc? 10 MR. DEARING: Objection; form. 11 Speculation. He's already testified he's not an 12 expert in other methods. 13 Q. (BY MR. CHACHKES) You can answer. 14 A. The answer I would give is that having 15 scanned Dr. Godleski's papers, for example, he 16 reports uncertainties. He reports, I forgot, 17 5 percent uncertainty in the range of chemical 18 compositions, and that's more ambiguous than what 19 Raman spectroscopy can tell you. 20 Q. What sources of funding were there for 21 this paper other than money from plaintiffs' 22 lawyers? 23 A. None. 24 Q. What did Renishaw get?</p>	<p>1 Q. So in a nutshell, Renishaw's incentive was 2 that they saw the potential for greater use of their 3 instruments in a pathology context? 4 A. Correct. 5 Q. And what about Godleski? Do you know 6 whether he was paid by plaintiffs' lawyers? 7 A. I don't know that for a fact. 8 Q. Does it seem a fair assumption that he was 9 paid just as you were? 10 MR. DEARING: Objection; speculation. 11 A. I don't know. I simply don't know what 12 his financial arrangements were. 13 Q. (BY MR. CHACHKES) Okay. Isn't the same 14 true of all of others, minus Kenna -- Kenneth Smith; 15 you don't know how all the other authors were 16 compensated, if at all? 17 A. I have no reason to believe that they were 18 compensated for this work. I believe that John 19 wanted them cited in recognition for their past 20 contributions. 21 Q. When you say "past contributions," 22 meaning, they've contributed nothing specific to 23 this article? 24 A. They were responsible for the development</p>

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<p>1 of the cell lines and the electron microscopy and</p> <p>2 that sort of stuff. I don't know whether -- whether</p> <p>3 Fan actually did an electron micrograph for any of</p> <p>4 these samples or not. I simply don't know.</p> <p>5 Q. Am I correct that in the invoices that are</p> <p>6 marked as Exhibit 2 there are no billings for things</p> <p>7 other than work related to the paper that we're</p> <p>8 talking about?</p> <p>9 A. Correct.</p> <p>10 Q. So when I see things in this bill where</p> <p>11 you bill for time talking to plaintiffs' attorneys,</p> <p>12 that relates to this paper?</p> <p>13 A. Yes.</p> <p>14 Q. And you've had a long-standing</p> <p>15 relationship with the Renishaw lab?</p> <p>16 A. Yes.</p> <p>17 Q. Going back to when?</p> <p>18 A. 2002.</p> <p>19 Q. What --</p> <p>20 A. Actually, before that. They had a more</p> <p>21 primitive instrument that we used at Advanced Micro</p> <p>22 Devices in the late -- 1997, 1998. I was sort of an</p> <p>23 informal consultant for AMD and my very first</p> <p>24 experience with Raman microscopy was in their first</p>	<p>1 lab, as well as the equipment necessary to try to</p> <p>2 develop a Raman near-field microscope to increase</p> <p>3 the spatial resolution of Raman microscopy down to</p> <p>4 the 10-nanometer range. That project proved to be</p> <p>5 overly ambitious and ultimately unsuccessful, but</p> <p>6 the goal was to see if I could characterize strain</p> <p>7 in silicon with high spatial resolution.</p> <p>8 Q. Have you ever received any compensation</p> <p>9 from Renishaw?</p> <p>10 A. No.</p> <p>11 Q. Okay. So since 2002, your relationship</p> <p>12 with Renishaw has been sort of mutually</p> <p>13 advantageous, is that correct, where you get to do</p> <p>14 work with their instruments and they get sort of --</p> <p>15 you know?</p> <p>16 A. No, no, no, no. It's only this new</p> <p>17 project is where I went to Renishaw and used their</p> <p>18 instruments.</p> <p>19 Prior to that, I had purchased an</p> <p>20 instrument which was in my laboratory.</p> <p>21 Q. Okay. Other than having purchased an</p> <p>22 equipment with Renishaw, did you have any sort of</p> <p>23 kind of relationship with them?</p> <p>24 A. If there were technical issues that arose</p>
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<p>1 generation instrument and the application was a</p> <p>2 microelectronics application. I believe we have a</p> <p>3 publication in that area, but for sure I had a</p> <p>4 student who did a master's thesis in which we</p> <p>5 ident- -- we were able to identify a impurity,</p> <p>6 residual material, whatever you want to call it,</p> <p>7 on -- on 12-inch silicon wafers that had been</p> <p>8 mystifying to them.</p> <p>9 Q. Okay. And something happened in 2002</p> <p>10 where you kind of renewed this relationship?</p> <p>11 A. Yeah. So what happened was -- and I'm</p> <p>12 trying to remember the history here. But about that</p> <p>13 time, there was a great interest in the material</p> <p>14 called strained silicon, and I believe it was</p> <p>15 through Sematech that I first learned about strained</p> <p>16 silicon.</p> <p>17 And one of the ways you measure strain</p> <p>18 in silicon is using Raman microscopy. So when we</p> <p>19 were on sabbatical in Paris in 2001, 2002, I wrote a</p> <p>20 proposal and got about a million and a quarter or</p> <p>21 million and a half, something like that, dollars</p> <p>22 from the National Science Foundation under their</p> <p>23 major research instrumentation program that funded</p> <p>24 the purchase of a Renishaw microscope I had in my</p>	<p>1 from our instrument, I -- I would talk to them, send</p> <p>2 a technician down, adjust it, that sort of stuff,</p> <p>3 but that was it.</p> <p>4 Q. Okay. In the acknowledgments of your</p> <p>5 paper, I see it says -- and this is on page 8 --</p> <p>6 "This study was supported in part by a pilot project</p> <p>7 grant and the Particles Research Core of the Harvard</p> <p>8 Center for Environmental Health supported by NIEHS,"</p> <p>9 and there's a number.</p> <p>10 Do see that?</p> <p>11 A. Yep.</p> <p>12 Q. What is that pilot project grant?</p> <p>13 A. I have absolutely no idea. That was</p> <p>14 Fedulov's and Godleski's.</p> <p>15 Q. Okay. So this support from -- that is</p> <p>16 listed in that first sentence, do you know whether</p> <p>17 that was financial support or that was equipment</p> <p>18 support or something else?</p> <p>19 A. I really don't know.</p> <p>20 Q. And it's possible that the only financial</p> <p>21 support for this paper came from plaintiffs'</p> <p>22 lawyers?</p> <p>23 A. It's possible.</p> <p>24 Q. Was Dr. Godleski responsible for whatever</p>

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<p>1 support was received and it's mentioned in the</p> <p>2 acknowledgments?</p> <p>3 A. All I know is what the acknowledgment</p> <p>4 says, and we never discussed it.</p> <p>5 Q. Okay. He put that there, right?</p> <p>6 A. Yes.</p> <p>7 Q. Okay. So it's possible Dr. Godleski was</p> <p>8 responsible for that support?</p> <p>9 A. (Examined document.)</p> <p>10 Q. Who else would it be?</p> <p>11 A. Well, I mean, I can read this as well as</p> <p>12 you can. So Fedulov was a PI on one grant and the</p> <p>13 particle research core was Dr. Godleski.</p> <p>14 I have no information beyond what is</p> <p>15 contained in that sentence.</p> <p>16 Q. Okay. Who's Dr. Fedulov other than a</p> <p>17 co-author? I mean, he --</p> <p>18 A. I think -- I think he was the guy that did</p> <p>19 the cell line developmental work, but I just don't</p> <p>20 recall.</p> <p>21 Q. Do you know what the particle research</p> <p>22 core of the Harvard Center for Environmental Health</p> <p>23 is?</p> <p>24 A. No.</p>	<p>1 MR. DEARING: No.</p> <p>2 Q. (BY MR. CHACHKES) Okay. Can -- can -- do</p> <p>3 you mind taking out the Godleski expert report that</p> <p>4 is Number 11 in your materials considered? We're</p> <p>5 gonna just mark it as the next -- an exhibit.</p> <p>6 A. I will get it back?</p> <p>7 Q. In a way you will.</p> <p>8 MR. CHACHKES: Do you mind marking</p> <p>9 that as Exhibit 3? Okay.</p> <p>10 (Deposition Exhibit 3 marked for</p> <p>11 identification.)</p> <p>12 MR. CHACHKES: Okay. I don't know if</p> <p>13 anyone has a paperclip.</p> <p>14 Q. (BY MR. CHACHKES) So I'll just confirm</p> <p>15 that what is marked now as Exhibit 3 is the Godleski</p> <p>16 report that you refer to in your materials</p> <p>17 considered.</p> <p>18 A. Okay. (Examined exhibit.)</p> <p>19 Q. Do you confirm --</p> <p>20 MR. DEARING: Can we leave it out?</p> <p>21 MR. CHACHKES: Yeah, leave it out.</p> <p>22 Q. (BY MR. CHACHKES) You just -- do you</p> <p>23 confirm that that is indeed the case, that this is</p> <p>24 Number 11 on your materials considered?</p>
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<p>1 Q. You don't know what Dr. Godleski's</p> <p>2 relationship to that center is?</p> <p>3 A. No.</p> <p>4 Q. To what degree -- you -- you cite in your</p> <p>5 materials considered an expert report from</p> <p>6 Dr. Godleski that's dated from June of 2018,</p> <p>7 correct?</p> <p>8 A. Yes.</p> <p>9 Q. Okay. To what degree did that impact the</p> <p>10 opinions in your expert opinion that is your expert</p> <p>11 report that is Exhibit 1?</p> <p>12 A. I'm not sure that I was even aware of that</p> <p>13 report when I prepared my expert report. I -- I</p> <p>14 don't think I referred to it in my expert report and</p> <p>15 I certainly didn't remember knowing what was in it.</p> <p>16 Q. Do you -- does the Godleski expert</p> <p>17 report -- do they have any impact whatsoever on the</p> <p>18 publication?</p> <p>19 A. No. The publication was well before the</p> <p>20 Godleski report.</p> <p>21 Q. Okay.</p> <p>22 MR. CHACHKES: Do you have any</p> <p>23 objection to marking that report as an exhibit in</p> <p>24 the deposition?</p>	<p>1 A. Oh, yes.</p> <p>2 Q. In your invoices, I see that you've billed</p> <p>3 for a meeting in St. Louis with Godleski.</p> <p>4 What was going on in St. Louis?</p> <p>5 A. Oh, there was a microscopy conference that</p> <p>6 he was attending. Renishaw was going to be there</p> <p>7 and they were rolling out some new instrumentation,</p> <p>8 and John thought it would be a good time to get</p> <p>9 together and start thinking about drafting our</p> <p>10 paper, if I remember correctly.</p> <p>11 Q. Okay. I'm just gonna put this in the</p> <p>12 stack of exhibits over here so it doesn't get lost.</p> <p>13 Have the -- have the conclusions or</p> <p>14 the work that's been done that's reflected in your</p> <p>15 paper -- your publication been replicated or tested</p> <p>16 by anybody other than what's reflected in the paper</p> <p>17 itself?</p> <p>18 A. Not to my knowledge.</p> <p>19 Q. You state in your opinion that -- your</p> <p>20 opinion in part is based on your review of</p> <p>21 scientific literature; is that correct?</p> <p>22 A. In my expert report?</p> <p>23 Q. Yeah.</p> <p>24 A. If that's what I said, then it's correct.</p>

29 (Pages 110 to 113)

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<p style="text-align: right;">Page 114</p> <p>1 Q. Okay. And then I'm just gonna point you</p> <p>2 to page 3. You write that "There are dozens, if not</p> <p>3 hundreds, of papers written that demonstrate the</p> <p>4 application of Raman microscopy to a wide variety of</p> <p>5 problems in biology and medicine."</p> <p>6 A. Um-hum.</p> <p>7 Q. Do you stand by that statement?</p> <p>8 A. Absolutely.</p> <p>9 Q. But the literature describing the use of</p> <p>10 Raman microscopy to identify inorganic particles in</p> <p>11 tissue is much more limited, correct?</p> <p>12 A. That's correct.</p> <p>13 Q. And you identified for me three</p> <p>14 publications that relate to that, correct?</p> <p>15 A. That's correct.</p> <p>16 Q. And those are what -- remind me of those</p> <p>17 numbers, 3, 4, and 5 --</p> <p>18 A. Yes.</p> <p>19 Q. -- in your expert report?</p> <p>20 A. Yes.</p> <p>21 Q. 3, 4, and 5 are peer-reviewed?</p> <p>22 A. Oh, yes.</p> <p>23 Q. Are you -- so I see that your billing ends</p> <p>24 in June.</p>	<p style="text-align: right;">Page 116</p> <p>1 Q. It had something to do with identifying</p> <p>2 talc in human tissue?</p> <p>3 A. I think so.</p> <p>4 Q. You have no recollection whatsoever why</p> <p>5 you went to Renishaw three months ago -- in the last</p> <p>6 three months?</p> <p>7 A. I don't have a detailed recollection. It</p> <p>8 was to follow up on something. I just don't</p> <p>9 remember what it was.</p> <p>10 Q. Since your paper was already accepted for</p> <p>11 publication at that point, what were you following</p> <p>12 up on?</p> <p>13 A. I really don't -- I don't recall.</p> <p>14 Q. Do you have any plans to do additional</p> <p>15 work in this area?</p> <p>16 A. If I'm asked to. I don't have any current</p> <p>17 plans.</p> <p>18 Q. Have you been asked to?</p> <p>19 A. No.</p> <p>20 Q. Has anybody from the plaintiffs' side said</p> <p>21 to expect work to come?</p> <p>22 A. No.</p> <p>23 Q. So as far as you know, this may be the end</p> <p>24 of your research into talc -- identifying talc in</p>
<p style="text-align: right;">Page 115</p> <p>1 What have you billed in June?</p> <p>2 A. I haven't billed anything since June.</p> <p>3 Q. Okay. You will, however, bill for the</p> <p>4 work -- for the time preparing for this deposition</p> <p>5 and this deposition, correct?</p> <p>6 A. Sure.</p> <p>7 Q. Anything else that you're planning to bill</p> <p>8 for?</p> <p>9 A. You know, I think we had a couple of more</p> <p>10 days of work up in Chicago. I just -- I just don't</p> <p>11 recall. I just -- I haven't done the billing. I</p> <p>12 just haven't kept up with it.</p> <p>13 Q. The couple more days in Chicago, what was</p> <p>14 that?</p> <p>15 A. I don't recall. We just went to -- to --</p> <p>16 I just don't recall. Went up to do some -- some</p> <p>17 experiment.</p> <p>18 Q. Is Chicago -- what was in Chicago?</p> <p>19 A. That's Renishaw.</p> <p>20 Q. Okay. That was recent?</p> <p>21 A. I have to look at my schedule. I just</p> <p>22 really don't recall off the top of my head.</p> <p>23 Q. Past three months?</p> <p>24 A. It was at the end of last year. Yeah.</p>	<p style="text-align: right;">Page 117</p> <p>1 human tissue?</p> <p>2 A. As far as I know.</p> <p>3 Q. Are you aware of any activity whatsoever</p> <p>4 to apply the technique you lay out in your</p> <p>5 publication to actual slides from actual plaintiffs</p> <p>6 in talc cases?</p> <p>7 A. Are you asking me if I'm going to be asked</p> <p>8 to testify in cases? Is that what you're asking me?</p> <p>9 Q. Well, something much more general.</p> <p>10 A. All right.</p> <p>11 Q. Which is: Are you aware of any activity</p> <p>12 whatsoever, whether it's you, Godleski, anybody else</p> <p>13 who's going to take the techniques in your paper and</p> <p>14 use it to identify talc in the context of a talc</p> <p>15 litigation?</p> <p>16 A. I'm not currently aware of any plans like</p> <p>17 that.</p> <p>18 Q. Okay. Are you aware of any published</p> <p>19 literature, anything that you saw while writing your</p> <p>20 paper, or the process of preparing your expert</p> <p>21 report, where the conclusions were, to any degree,</p> <p>22 contrary to your conclusions?</p> <p>23 A. I haven't seen anything that's contrary to</p> <p>24 our conclusions.</p>

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<p>1 Q. Or inconsistent?</p> <p>2 A. Or inconsistent.</p> <p>3 Q. All right. I want to look at the Pence</p> <p>4 paper, if you can find --</p> <p>5 MR. CHACHKES: I'm sorry. Dave, do</p> <p>6 you mind helping? Sorry.</p> <p>7 THE WITNESS: I'm sorry to be using</p> <p>8 you in that regard.</p> <p>9 MR. CHACHKES: It's the Pence paper,</p> <p>10 yeah.</p> <p>11 Q. (BY MR. CHACHKES) So let me -- so you --</p> <p>12 you cite the --</p> <p>13 MR. CHACHKES: Thanks, that was quick.</p> <p>14 Q. (BY MR. CHACHKES) -- you cite the Pence</p> <p>15 paper as number -- let's see, as Number 1 in your</p> <p>16 Relevant Literature Review in your expert report,</p> <p>17 correct?</p> <p>18 A. Yes.</p> <p>19 Q. And of it on page 3 you say the Pence --</p> <p>20 let me just go there. You say, "Inhaled particles</p> <p>21 (including talc, rutile, alpha-quartz, calcite, and</p> <p>22 related compounds) were identified in human tissue</p> <p>23 sections using Raman microscopy," correct?</p> <p>24 A. That was a mistake.</p>	<p>1 want to bring to my attention?</p> <p>2 A. That's the only mistake I'm aware of.</p> <p>3 Q. Okay. In fact, the paper does not mention</p> <p>4 inhaled particles, correct?</p> <p>5 A. That's correct.</p> <p>6 Q. And it does not mention the -- the</p> <p>7 minerals that you list?</p> <p>8 A. That's correct.</p> <p>9 MR. CHACHKES: Do you mind giving me</p> <p>10 the book? It's probably the big thick one.</p> <p>11 Q. (BY MR. CHACHKES) And then you cite a</p> <p>12 book by Taporski and others, Confocal Raman</p> <p>13 Microscopy, correct?</p> <p>14 A. Yes. Um-hum.</p> <p>15 MR. CHACHKES: Yeah. Thank you.</p> <p>16 Q. (BY MR. CHACHKES) And you cite this book</p> <p>17 because it describes recent developments in</p> <p>18 applications of Raman spectroscopy, correct?</p> <p>19 A. Right.</p> <p>20 Q. This book doesn't discuss the use of Raman</p> <p>21 spectroscopy to identify talc, does it?</p> <p>22 A. I've skimmed the book. I have not read it</p> <p>23 cover to cover.</p> <p>24 My point in including it is to</p>
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<p>1 Q. Ah. Why was it a mistake?</p> <p>2 A. It must have been referring to Paper</p> <p>3 Number 3 because I reread the Pence paper. And so I</p> <p>4 don't know if that was a bad cut and paste or a bad</p> <p>5 proofreading job, but . . .</p> <p>6 Q. Okay.</p> <p>7 A. So that paper does not contain anything</p> <p>8 relevant to particles.</p> <p>9 Q. Okay. And did you read the paper prior to</p> <p>10 writing this report?</p> <p>11 A. Yes.</p> <p>12 Q. Okay. You alone wrote the words in this</p> <p>13 paper, right? In your --</p> <p>14 A. Yes.</p> <p>15 Q. -- opinion, right?</p> <p>16 A. Yes.</p> <p>17 Q. Did you share drafts with plaintiffs'</p> <p>18 counsel when you were writing this?</p> <p>19 A. We may have exchanged one draft but just</p> <p>20 for format sake.</p> <p>21 Q. Okay. Are there any other mistakes in</p> <p>22 your -- either your --</p> <p>23 A. Not that I've discovered.</p> <p>24 Q. Okay. That's the only mistake that you</p>	<p>1 demonstrate the myriad of applications of confocal</p> <p>2 Raman microscopy that are available to establish the</p> <p>3 widespread utility and the, sort of, high regard</p> <p>4 that the technique is held in the field -- in fact,</p> <p>5 in many fields.</p> <p>6 Q. My -- my question is much more limited.</p> <p>7 The book doesn't discuss the use of</p> <p>8 Raman spectroscopy to identify talc, does it?</p> <p>9 A. I don't know. I didn't read it that</p> <p>10 carefully.</p> <p>11 Q. Okay.</p> <p>12 A. I skimmed it.</p> <p>13 Q. And this book does not discuss the use of</p> <p>14 Raman spectroscopy to identify asbestos, does it?</p> <p>15 A. I don't recall. I can reread the book.</p> <p>16 Q. Sitting here today, you said you can't</p> <p>17 tell me?</p> <p>18 A. Sitting here today, I can't tell you</p> <p>19 definitively, that's right.</p> <p>20 Q. Okay. You also list an article by de Mull</p> <p>21 entitled "Raman misc- -- Microscopy in Human</p> <p>22 Pathology"?</p> <p>23 A. Yep.</p> <p>24 Q. Okay. And you say -- you say that this --</p>

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<p>1 actually, skip that.</p> <p>2 This paper studied two individuals,</p> <p>3 one with silicosis and one who cleaned rubber tanks,</p> <p>4 correct?</p> <p>5 A. I don't recall.</p> <p>6 Q. All right. Let me just mark it as an</p> <p>7 exhibit.</p> <p>8 MR. CHACHKES: Are we on 4? Okay.</p> <p>9 (Deposition Exhibit 4 marked for</p> <p>10 identification.)</p> <p>11 Q. (BY MR. CHACHKES) Yeah. So if you could</p> <p>12 confirm what's been marked as Exhibit 4 is -- what</p> <p>13 you have is --</p> <p>14 A. Yes.</p> <p>15 Q. -- Item Number 3 in your Relevant</p> <p>16 Literature Review?</p> <p>17 A. Yes.</p> <p>18 Q. Okay. And did you review any of the</p> <p>19 papers cited by de Mull in this publication?</p> <p>20 A. I did not.</p> <p>21 Q. Then how do you know whether you are, in</p> <p>22 fact, correct when you say, "This is the first</p> <p>23 application of Raman microscopy in human pathology"?</p> <p>24 MR. DEARING: Actually, I believe he</p>	<p>1 to just read it.</p> <p>2 A. (Examined exhibit.) Yes, that's what I</p> <p>3 wrote.</p> <p>4 Q. Okay. And the paper studied two</p> <p>5 individuals, one with silicosis and one who cleaned</p> <p>6 rubber tanks, correct?</p> <p>7 A. That's what it says.</p> <p>8 Q. And in the silicosis patient's lungs in</p> <p>9 this paper that's marked as Exhibit 4, Raman spectra</p> <p>10 were found that resembled a reference quartz</p> <p>11 spectrum, correct?</p> <p>12 A. (Examined exhibit.) Yeah. That would be</p> <p>13 Figure 4.</p> <p>14 Q. Well, you tell me. I'm -- it's a</p> <p>15 question.</p> <p>16 A. I'm looking at the paper and that's what</p> <p>17 it says in Figure 4.</p> <p>18 Q. Okay. In the other patient, Raman spectra</p> <p>19 identified talc and rutile, correct?</p> <p>20 A. Yes.</p> <p>21 Q. In the case of the silicocious --</p> <p>22 silicosis patient, the quartz was already known to</p> <p>23 be present because the researcher had used polarized</p> <p>24 light microscopy to identify the quartz, right?</p>
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<p>1 says, "that I'm aware of."</p> <p>2 A. It was the first one I could find doing a</p> <p>3 literature search.</p> <p>4 Q. (BY MR. CHACHKES) Okay. You might be</p> <p>5 wrong?</p> <p>6 A. Yes.</p> <p>7 Q. Okay. You also write about this paper,</p> <p>8 "The authors identified particles that include talc,</p> <p>9 rutile, quartz, and related compounds in lung and</p> <p>10 lymph node tissue."</p> <p>11 Do you see that in your -- your</p> <p>12 report?</p> <p>13 A. Yes.</p> <p>14 Q. And then you write that "The authors</p> <p>15 concluded that the Raman technique could be used for</p> <p>16 this nondestructive identification of inclusions in</p> <p>17 human lung and lymph node tissue and that this</p> <p>18 technique can be extended to other tissues."</p> <p>19 Do you see that? You wrote that.</p> <p>20 A. Okay.</p> <p>21 Q. Correct?</p> <p>22 A. If that's what I wrote, that's what I</p> <p>23 wrote.</p> <p>24 Q. I'm not trying to trick you. If you want</p>	<p>1 A. Can I have a moment to refresh my memory</p> <p>2 here?</p> <p>3 Q. Sure.</p> <p>4 A. (Examined exhibit.) Yeah. So Figure 4</p> <p>5 compares a particle found in a lymph node to a</p> <p>6 reference particle and the spectra look virtually</p> <p>7 identical or close enough that you could identify</p> <p>8 the particle as alpha-quartz.</p> <p>9 Q. Well, the question was different. It was</p> <p>10 about PLM. Let me ask it again.</p> <p>11 In the case of silicosis pat- --</p> <p>12 silicosis patient, the quartz was already known to</p> <p>13 be present prior to the Raman spectroscopy because</p> <p>14 the researchers had used polarized light microscopy</p> <p>15 to identify the quartz; is that correct?</p> <p>16 A. (Examined exhibit.) I mean, I don't see</p> <p>17 that. So are -- I mean, can you point me to where</p> <p>18 you see that because I don't see it?</p> <p>19 Q. Okay. So you don't see it?</p> <p>20 A. Huh-uh.</p> <p>21 Q. Okay. Let's move on to the next paper.</p> <p>22 Let's talk about -- you identify a</p> <p>23 study by Rinaudo and that's Paper Number 4 in your</p> <p>24 expert report, correct?</p>

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<p>1 A. Yes.</p> <p>2 MR. CHACHKES: Thank you.</p> <p>3 Q. (BY MR. CHACHKES) You say in your report</p> <p>4 that "The authors identified asbestos bodies and</p> <p>5 talc in lung and pleural plaque tissues. They</p> <p>6 describe the technique for study of inorganic</p> <p>7 particles/fibers incorporated in the biological</p> <p>8 system directly within the histology -- histological</p> <p>9 sections, without digestion of the tissue," correct?</p> <p>10 A. (Examined exhibit.)</p> <p>11 Q. I'm just quoting what you wrote.</p> <p>12 A. Yeah. I'm just refreshing my memory.</p> <p>13 Q. Okay. And that's -- you -- that's an</p> <p>14 accurate representation of your summary of the -- of</p> <p>15 the Rinaudo paper?</p> <p>16 A. That's what I gleaned from reading that</p> <p>17 paper at that time, yes.</p> <p>18 Q. Okay. Do you know if the method used by</p> <p>19 Rinaudo has ever been repeated to identify asbestos</p> <p>20 bodies in lung tissue?</p> <p>21 A. I -- no.</p> <p>22 Q. Do you know whether the method used by</p> <p>23 Rinaudo has ever been repeated to identify talc</p> <p>24 bodies in lung tissue?</p>	<p>1 MR. CHACHKES: Sure.</p> <p>2 MR. DEARING: It appears that these</p> <p>3 two studies or articles have different titles, so</p> <p>4 are you sure they're the same?</p> <p>5 MR. CHACHKES: No, they don't.</p> <p>6 Number 4. Exhibit 5 is Number 4.</p> <p>7 MR. DEARING: Sorry. I was looking</p> <p>8 at 5.</p> <p>9 MR. CHACHKES: Okay.</p> <p>10 MR. DEARING: Sorry about that.</p> <p>11 Q. (BY MR. CHACHKES) So -- where were we?</p> <p>12 You said -- now you -- you state in your expert</p> <p>13 report that the authors identified two minerals of</p> <p>14 interest, chrysotile and talc, correct?</p> <p>15 A. Um-hum.</p> <p>16 Q. That a "yes"?</p> <p>17 A. Yes.</p> <p>18 Q. Okay. And are you aware that chrysotile,</p> <p>19 the word "chrysotile" doesn't appear in this paper?</p> <p>20 A. (Examined exhibit.) I must have made a</p> <p>21 mistake perhaps. Maybe it was -- I can never say</p> <p>22 these things -- chrysotile [sic].</p> <p>23 Q. So what you're doing now is you're trying</p> <p>24 to pronounce a kind of asbestos, correct?</p>
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<p>1 A. So I believe that Paper Number 5 is an</p> <p>2 extension of Paper Number 4. So they may have</p> <p>3 repeated their earlier measurements.</p> <p>4 Q. Do you know if that's the -- do you know</p> <p>5 whether that's the same method in 5 that was used</p> <p>6 in 4?</p> <p>7 A. It was just a refinement.</p> <p>8 Q. Okay. Can we mark the Rinaudo paper as an</p> <p>9 exhibit?</p> <p>10 THE COURT REPORTER: This would be</p> <p>11 Exhibit 5.</p> <p>12 MR. CHACHKES: Thanks.</p> <p>13 (Deposition Exhibit 5 marked for</p> <p>14 identification.)</p> <p>15 Q. (BY MR. CHACHKES) Can you confirm that</p> <p>16 what's been marked as Exhibit 5 is the Rinaudo paper</p> <p>17 that you list as Number 4 in your expert report?</p> <p>18 A. (Examined exhibit.) Yes.</p> <p>19 Q. Okay. You say in your report in the last</p> <p>20 sentence that Raman that they identified two</p> <p>21 minerals of interest, chrysotile and talc; is that</p> <p>22 correct?</p> <p>23 MR. DEARING: Can I interrupt you for</p> <p>24 a minute?</p>	<p>1 A. Yes.</p> <p>2 Q. Okay. It's pronounced crocidolite.</p> <p>3 A. Whatever you say.</p> <p>4 Q. Okay.</p> <p>5 A. I told you I couldn't pronounce it.</p> <p>6 Q. Okay. Crocidolite is not the same thing</p> <p>7 as chrysotile.</p> <p>8 You understand that, don't you?</p> <p>9 A. Yes.</p> <p>10 Q. Okay. How is it you made this typo when</p> <p>11 you don't know anything about asbestos, replacing</p> <p>12 one kind of asbestos for another?</p> <p>13 A. I don't know.</p> <p>14 MR. DEARING: Objection; form.</p> <p>15 A. I don't have a good explanation.</p> <p>16 Q. (BY MR. CHACHKES) Could it be that</p> <p>17 plaintiffs' lawyers did that correction for you?</p> <p>18 A. Absolutely not.</p> <p>19 MR. DEARING: Object; form.</p> <p>20 Can you -- let me stop you for a</p> <p>21 minute. Can you read back two questions ago? I'm</p> <p>22 misunderstanding what you think he got confused.</p> <p>23 MR. CHACHKES: What?</p> <p>24 MR. DEARING: I misunderstood -- I</p>

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<p>1 don't understand what you're suggesting about what</p> <p>2 he got confused on.</p> <p>3 MR. CHACHKES: You'll -- you have</p> <p>4 redirect if you'd like. That's a good</p> <p>5 opportunity --</p> <p>6 MR. DEARING: I just want to hear the</p> <p>7 question.</p> <p>8 MR. CHACHKES: It's on your screen.</p> <p>9 (Mr. Dearing examined realtime</p> <p>10 screen.)</p> <p>11 MR. DEARING: Okay.</p> <p>12 MR. CHACHKES: Okay.</p> <p>13 Q. (BY MR. CHACHKES) Are you aware of what</p> <p>14 asbestos group chrysotile belongs to?</p> <p>15 A. No.</p> <p>16 Q. Are you aware what asbestos group</p> <p>17 crocidolite belongs to?</p> <p>18 A. No.</p> <p>19 Q. And indeed the paper doesn't say the paper</p> <p>20 said that it found crocidolite and talc, in fact,</p> <p>21 but it found spectra consistent with crocidolite and</p> <p>22 talc?</p> <p>23 MS. O'DELL: Object to the form. Feel</p> <p>24 free to take a look at the paper, if you'd like.</p>	<p>1 You cite the Musa paper as Number 5,</p> <p>2 correct?</p> <p>3 A. Yes.</p> <p>4 MR. CHACHKES: Okay. Let's mark that</p> <p>5 as an exhibit.</p> <p>6 THE COURT REPORTER: This will be</p> <p>7 Exhibit 6.</p> <p>8 (Deposition Exhibit 6 marked for</p> <p>9 identification.)</p> <p>10 Q. (BY MR. CHACHKES) Can you confirm that</p> <p>11 what's marked as Exhibit 6 is Paper Number 5, the</p> <p>12 Musa paper, Paper Number 5 in your report?</p> <p>13 A. Yes.</p> <p>14 Q. Okay. And of this paper you write that</p> <p>15 the authors demonstrated that "Raman microscopy can</p> <p>16 be applied directly to histo- -- histological</p> <p>17 sections prepared for medical diagnosis," correct?</p> <p>18 A. Yes.</p> <p>19 Q. You also write that the paper represents</p> <p>20 an extension of the previous paper and -- actually,</p> <p>21 strike that.</p> <p>22 So you were relying on this paper to</p> <p>23 support your opinion that Raman spectroscopy can be</p> <p>24 used to identify talc and asbestos in human tissue?</p>
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<p>1 MR. DEARING: You're misstating the</p> <p>2 conclusion.</p> <p>3 MR. CHACHKES: If you -- if you guys</p> <p>4 could limit the instructions to the witness, I don't</p> <p>5 think he needs your help.</p> <p>6 MR. DEARING: Well, don't mislead him</p> <p>7 because you're misstating what's in the paper.</p> <p>8 MR. CHACHKES: I -- he's a scientist.</p> <p>9 He gets this.</p> <p>10 A. (Examined exhibit.) Well, at the bottom</p> <p>11 of page 575, it looks to me like they concluded, and</p> <p>12 I quote, "We can therefore conclude that</p> <p>13 'crocidolite' was the asbestos phase prev- --</p> <p>14 prevalently breathed by the patient whose lungs thin</p> <p>15 sections were studied."</p> <p>16 Q. (BY MR. CHACHKES) And that's based on the</p> <p>17 identification -- so did you note that your attorney</p> <p>18 was pointing something out to you?</p> <p>19 A. Yes.</p> <p>20 Q. Yeah. And he was pointing to a part of</p> <p>21 the paper to help you find something in the paper,</p> <p>22 correct?</p> <p>23 A. Yes.</p> <p>24 Q. Let's talk about another thing you cite.</p>	<p>1 A. That's what they demonstrated.</p> <p>2 Q. Okay. Are you aware that the Musa paper</p> <p>3 reported a strong peak that is not present in talc</p> <p>4 or crocidolite?</p> <p>5 A. (Examined exhibit.)</p> <p>6 Q. I'll direct your attention to page 70, the</p> <p>7 text under Figure 10.</p> <p>8 A. So they assigned this band of 892 as due</p> <p>9 to paraffin film.</p> <p>10 Q. Okay. Does that impact your understanding</p> <p>11 of whether the identification of crocidolite was</p> <p>12 accurate?</p> <p>13 A. I'm not an expert in asbestos bodies. I</p> <p>14 was not asked to study them or be prepared to</p> <p>15 comment on them.</p> <p>16 So if you're asking me is the presence</p> <p>17 of a band known to arise from paraffin or from</p> <p>18 mounting medium or anything like that, confound</p> <p>19 their assignment, I would say no.</p> <p>20 Q. Okay. Do you feel your expertise is such</p> <p>21 that you can confirm that their identification of</p> <p>22 crocidolite was indeed correct?</p> <p>23 A. I haven't studied the Raman spectra of</p> <p>24 crocidolite.</p>

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<p style="text-align: right;">Page 134</p> <p>1 Q. Musa confirmed the Raman spectra with SEM 2 and EDS, correct? 3 A. It appears so, yes. 4 Q. And indeed, Musa used SEM/EDS to confirm 5 the kind of asbestos, correct? 6 A. That's what -- let's see. 7 (Examined exhibit.) So if you're 8 looking at Figure 5, Part B, they identify that as 9 clinocor- -- clinochlore. I don't see any other. 10 And then 5A was the EDS spectrum of talc. 11 So I don't see any SEM work done for 12 crocidolite in this paper. 13 Q. Okay. 14 MR. CHACHKES: We can take a break 15 here. I don't have an enormous amount after 16 lunch -- 17 THE WITNESS: Okay. 18 MR. CHACHKES: -- so I don't know if 19 that impacts on how much of a lunch you want to 20 take. 21 THE WITNESS: Okay. 22 MR. CHACHKES: But I'm only one of -- 23 MR. DEARING: I'm sure Ken has quite a 24 bit.</p>	<p style="text-align: right;">Page 136</p> <p>1 AFTERNOON SESSION 2 (Leigh O'Dell is not present.) 3 THE VIDEOGRAPHER: Back on the record. 4 Time is 1:21 p.m. 5 EXAMINATION (CONTINUED) 6 BY MR. CHACHKES: 7 Q. Dr. Campion, have you deleted or otherwise 8 destroyed or caused to be deleted any communications 9 regarding the funding of your research that we've 10 been talking to -- about today? 11 A. No. 12 Q. Okay. I do ask in the future, and you can 13 consult your counsel about this, that you preserve 14 all such communications. Okay? 15 A. Yes. 16 Q. That is, in any way relate to your article 17 and the funding of that article. 18 Can your -- the method you lay out for 19 detecting minerals in tissue, can that be used to 20 determine the abundance of a detected mineral in a 21 patient's body? 22 A. So that's sort of a two-part answer, 23 right. You would use polarized light microscopy to 24 determine the number of particles and then Raman to</p>
<p style="text-align: right;">Page 135</p> <p>1 THE VIDEOGRAPHER: Going off the 2 record. The time is 12:07 p.m. 3 4 (A lunch recess taken from 12:07 p.m. 5 to 1:21 p.m.) 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24</p>	<p style="text-align: right;">Page 137</p> <p>1 say that that is how many talc -- how many of those 2 particles were talc. 3 Q. But can that be extrapolated in a 4 scientifically significant way to the amount of talc 5 in the body, generally? 6 MR. DEARING: Objection; form. Beyond 7 his areas of expertise. 8 A. I don't know. 9 Q. (BY MR. CHACHKES) Do you know what 10 software those who use crystal -- those who use 11 Raman spectroscopy to identify minerals generally 12 use? Strike that. Let me make that a better 13 question. 14 A. Okay. 15 Q. For those folks who use Raman spectroscopy 16 to identify minerals, generally, do you know what 17 software they use to identify the spectra? 18 A. These are databases, and there are 19 probably four or five databases. I've come into -- 20 discover's not quite the right word. I looked into 21 two databases I hadn't looked into previously, but, 22 yes, there are a variety of these things. They're 23 quite standard. They're well recognized. They're 24 used by geologists and mineralogists, planetary</p>



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<p>1 scientists.</p> <p>2 Q. Have you talked to any geologists or</p> <p>3 mineralogists or planetary scientists to ask what</p> <p>4 they do?</p> <p>5 A. No.</p> <p>6 Q. So you're just assuming that's what --</p> <p>7 they use these databases?</p> <p>8 A. I'm not assuming that. If you go to their</p> <p>9 website, that's what they say they do.</p> <p>10 Q. Give me an example of a website.</p> <p>11 A. RRUFF, R-R-U-F-F. University of Arizona.</p> <p>12 Q. And do you know who has created that</p> <p>13 database?</p> <p>14 A. I don't remember the name of the faculty</p> <p>15 member in charge, but I did, in fact, send an e-mail</p> <p>16 to the staff scientist just yesterday to see if they</p> <p>17 had a search function, and they don't.</p> <p>18 Q. Okay. But if I wanted to figure out</p> <p>19 the -- what mineralogists do as a matter of course</p> <p>20 or practice, one good person to talk to would be the</p> <p>21 person who created the RRUFF database?</p> <p>22 A. Sure.</p> <p>23 Q. Have you heard of the CrystalSleuth</p> <p>24 software?</p>	<p>1 don't know that but if you tell me that's true.</p> <p>2 Q. And do you know that sometimes those</p> <p>3 composites don't have the precise chemical structure</p> <p>4 of the two individual compositions put together?</p> <p>5 A. It would be helpful if you gave me a</p> <p>6 concrete example.</p> <p>7 Q. Okay. So you don't know one way or the</p> <p>8 other whether this is, in fact, the case?</p> <p>9 A. Right.</p> <p>10 Q. And if, indeed, there are -- in nature,</p> <p>11 minerals can form what's called a -- so let me just</p> <p>12 strike that.</p> <p>13 Have you ever heard of a solid</p> <p>14 solution series?</p> <p>15 A. Yes.</p> <p>16 Q. What's a solid solution series?</p> <p>17 A. It is a compound of variable composition.</p> <p>18 Q. If in a tissue sample there's a solid</p> <p>19 solution series of two or more minerals, would Raman</p> <p>20 spectroscopy uniquely identify those minerals or</p> <p>21 would you have to do additional investigation to</p> <p>22 determine what you're looking at?</p> <p>23 A. I don't have direct experience in that</p> <p>24 area, but I believe that I would be able to make</p>
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<p>1 A. Yes, I've heard of it.</p> <p>2 Q. Okay. Do you know that it's known to be</p> <p>3 only 84 percent accurate?</p> <p>4 A. No, I don't know that.</p> <p>5 Q. Do you know why it might be less than</p> <p>6 100 percent accurate?</p> <p>7 A. I'm not gonna speculate. I have no idea.</p> <p>8 Q. Okay. Well, it does implicate your</p> <p>9 conclusions about the applicability of Raman</p> <p>10 spectroscopy to identifying minerals, doesn't it?</p> <p>11 A. I respectfully disagree.</p> <p>12 Q. Why do you disagree?</p> <p>13 A. I look at multiple databases and I see the</p> <p>14 same spectra in multiple databases for talc of</p> <p>15 different origins and they look identical. I have a</p> <p>16 high degree of confidence that it's talc.</p> <p>17 Q. Now, you're assuming, aren't you, that the</p> <p>18 minerals in a tissue sample would occur as a pure,</p> <p>19 simple composition, correct?</p> <p>20 A. I'm not making any assumptions about that.</p> <p>21 Q. Are you aware that sometimes minerals</p> <p>22 occur in nature and in tissue samples that are</p> <p>23 composites of more than one mineral?</p> <p>24 A. I'm not -- outside of my expertise, I</p>	<p>1 those identifications, as long as those composite</p> <p>2 materials existed in some database so that I could</p> <p>3 have some reference to look at.</p> <p>4 Q. And if they didn't exist in a database,</p> <p>5 then you wouldn't be able to uniquely identify what</p> <p>6 you were looking at using Raman spectroscopy?</p> <p>7 A. If that were the case, I would find some</p> <p>8 way to have someone prepare those, but this is all</p> <p>9 pretty hypothetical.</p> <p>10 Q. Hypothetical to you because you have no</p> <p>11 experience with minerals --</p> <p>12 A. Right.</p> <p>13 Q. -- right?</p> <p>14 A. Yeah, so it's difficult for me to answer</p> <p>15 that question.</p> <p>16 Q. Okay. In your paper, if you would turn to</p> <p>17 the end of page 5, you talk about probabilities.</p> <p>18 A. Yes.</p> <p>19 Q. Tell me when you're there.</p> <p>20 A. I know what you're referring to.</p> <p>21 Q. Yeah. Just -- okay. So in here you</p> <p>22 say -- actually, why don't you summarize for me</p> <p>23 what -- in lay terms what you're talking about when</p> <p>24 you talk about --</p>

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<p>1 A. So I constructed these --</p> <p>2 Q. -- the --</p> <p>3 A. -- if I can use that term, a simple</p> <p>4 statistical model asking myself the question, "What</p> <p>5 are the odds that these three peaks appearing</p> <p>6 simultaneously could come from something other than</p> <p>7 talc?"</p> <p>8 So joint probabilities are the</p> <p>9 products of individual probabilities, assuming that</p> <p>10 the individual probabilities are independent and</p> <p>11 uncorrelated.</p> <p>12 Then I said, "Let's use a standard of</p> <p>13 an uncertainty of 5 percent," which is a --</p> <p>14 typically used in medicine. It's typically called a</p> <p>15 P test in medicine. In physics, that's a standard</p> <p>16 for acceptance in the American Physical Society</p> <p>17 Journal, right, published often.</p> <p>18 So I said "Let's suppose it's</p> <p>19 5 percent." Then the odds of those three peaks</p> <p>20 coming from something other than talc is a product</p> <p>21 of .05 to the third power. So that's an estimate in</p> <p>22 my uncertainty as being less than a part in 10,000.</p> <p>23 Q. (BY MR. CHACHKES) And what P tests do</p> <p>24 mineralogists use when identifying minerals using</p>	<p>1 We believe you should have produced</p> <p>2 communications with the witness regarding the paper.</p> <p>3 We believe you should have produced</p> <p>4 all material regarding the funding of this paper</p> <p>5 and -- budgeting, funding, anything along those</p> <p>6 lines.</p> <p>7 Any comments that counsel made</p> <p>8 regarding the paper. This is something that is fair</p> <p>9 game and that was specifically noticed by us in our</p> <p>10 document requests.</p> <p>11 In addition, you were required to tell</p> <p>12 us what you were withholding before this deposition,</p> <p>13 and you did not, and you would also produce a</p> <p>14 privilege log, and you did not.</p> <p>15 So I'm gonna leave the deposition open</p> <p>16 and -- pending resolution of that and pass the</p> <p>17 witness to the next defendant --</p> <p>18 MR. DEARING: Okay.</p> <p>19 MR. CHACHKES: -- the next</p> <p>20 plaintiff -- plaintiff and --</p> <p>21 MR. DEARING: And we object to having</p> <p>22 the deposition open, but we'll resolve these issues.</p> <p>23 MR. FROST: We join in Mr. Chachkes's</p> <p>24 statements.</p>
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<p>1 Raman spectroscopy?</p> <p>2 A. I don't know the answer to that.</p> <p>3 Q. And what probability would you calculate</p> <p>4 for error, looking at a sample that you don't know</p> <p>5 what mineral it is, considering talc versus the</p> <p>6 other potential sheet silicates that you could be</p> <p>7 looking at?</p> <p>8 A. I believe that's what I just answered. I</p> <p>9 said: What are the odds that these three peaks</p> <p>10 could arise from three different substances</p> <p>11 uncorrelated?</p> <p>12 Q. Is it possible that similarly structured</p> <p>13 minerals, that is, similarly structured to talc,</p> <p>14 have those three peaks?</p> <p>15 A. So we talked about that this morning. I</p> <p>16 have searched multiple databases and I haven't seen</p> <p>17 a single mineral that has those three peaks. Not</p> <p>18 one.</p> <p>19 MR. CHACHKES: Okay. I have at this</p> <p>20 time no further questions. I do want to state for</p> <p>21 the record that we disagree with your privilege</p> <p>22 objections.</p> <p>23 We think you should have produced all</p> <p>24 the communications among the authors of the paper.</p>	<p>1 MR. CHACHKES: So I'm gonna move from</p> <p>2 this chair and someone else gets the honor of</p> <p>3 sitting here.</p> <p>4 Thank you for your time.</p> <p>5 MR. FERGUSON: David, can we go off</p> <p>6 the record?</p> <p>7 MR. DEARING: Sure.</p> <p>8 MR. FERGUSON: Thank you.</p> <p>9 MR. DEARING: Sure.</p> <p>10 THE VIDEOGRAPHER: Going off the</p> <p>11 record. The time is 1:32 p.m.</p> <p>12 (A recess was taken from 1:32 p.m.</p> <p>13 to 1:34 p.m.)</p> <p>14 THE VIDEOGRAPHER: Back on the record.</p> <p>15 The time is 1:34 p.m.</p> <p>16 EXAMINATION</p> <p>17 BY MR. FERGUSON:</p> <p>18 Q. Dr. Champion, my name is Ken Ferguson and I</p> <p>19 represent a company called Imerys.</p> <p>20 Do you know who Imerys is?</p> <p>21 A. I've heard the name.</p> <p>22 Q. Okay. And I'm gonna ask you some</p> <p>23 questions far less since Alex has covered most of</p> <p>24 what needs to be covered.</p>

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<p>1 But as he told you, please make sure</p> <p>2 that you understand my question before you answer.</p> <p>3 If you don't understand what I'm asking, please let</p> <p>4 me know.</p> <p>5 A. Thank you.</p> <p>6 Q. And I've noticed you're willing to do</p> <p>7 that --</p> <p>8 A. Thank you.</p> <p>9 Q. -- if you don't understand.</p> <p>10 First of all, what I want to do is</p> <p>11 just make sure I know what's all in this notebook.</p> <p>12 I don't think we've been through it yet. So -- and</p> <p>13 the notebook is -- is that something that you</p> <p>14 brought or that counsel brought to the deposition</p> <p>15 today?</p> <p>16 A. Counsel provided this to me, and he was</p> <p>17 kind enough to let me leave it in his hotel room</p> <p>18 last night so I didn't have to drag it back to my</p> <p>19 house.</p> <p>20 Q. Okay. And what I'm trying to figure out</p> <p>21 is: What is your understanding of what's in here?</p> <p>22 Are all of the items that are on your Materials</p> <p>23 Reviewed list in here?</p> <p>24 A. Yes.</p>	<p>1 called "Raman Microspectroscopy in Human Pathology"</p> <p>2 by F.F.M. de Mul; d-e, new word, M-u-l, correct?</p> <p>3 A. Yes.</p> <p>4 Q. And has that been listed as a --</p> <p>5 A. It's Exhibit 4.</p> <p>6 Q. Okay. The next item is Dr. Godleski's</p> <p>7 report, and that has been marked, correct?</p> <p>8 A. That's Exhibit 3.</p> <p>9 Q. Then the next item in the notebook is --</p> <p>10 which I don't think has been marked, is -- looks</p> <p>11 like perhaps a book chapter?</p> <p>12 A. It's a book.</p> <p>13 Q. It's a whole book. From -- called</p> <p>14 "Introductory Raman Spectroscopy, 2nd Edition,</p> <p>15 2003," by John R. Ferraro and others, correct?</p> <p>16 A. Yes.</p> <p>17 Q. And is this something that you have relied</p> <p>18 upon in the course of your research in this matter?</p> <p>19 A. No. I included it as a reference to</p> <p>20 illustrate the applicability of Raman spectroscopy.</p> <p>21 Q. And did you select this book in particular</p> <p>22 because you thought that it described this issue</p> <p>23 well or because it's one that you referred to or</p> <p>24 what?</p>
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<p>1 Q. Or selected items?</p> <p>2 A. All of the items, as far as I'm aware, are</p> <p>3 in there. The last document, which is just a single</p> <p>4 page, that I've referenced to an electronic book.</p> <p>5 Q. So the first thing that I come to when I</p> <p>6 open the notebook is your Rule 26 Expert Report,</p> <p>7 which I think has been previously marked as</p> <p>8 Exhibit -- and I think you have it to your left.</p> <p>9 A. Okay.</p> <p>10 Q. What exhibit number is that?</p> <p>11 A. Exhibit 1.</p> <p>12 Q. Okay. And may I take a look at that. I</p> <p>13 just want to make sure it corresponds to this, as</p> <p>14 far as having this materials considered list as well</p> <p>15 and it does.</p> <p>16 Then the second tab is -- it says</p> <p>17 "Campion (2018) Identification of Foreign" -- and</p> <p>18 it's your . . .</p> <p>19 A. Publication.</p> <p>20 Q. Publication that has been discussed as</p> <p>21 well that -- this copy was downloaded on July 1,</p> <p>22 2018, correct?</p> <p>23 A. That's what it says.</p> <p>24 Q. Okay. Then the next item is an article</p>	<p>1 A. It's a classic. It's been around forever.</p> <p>2 Q. And I think just to be complete I'm gonna</p> <p>3 go ahead and mark that.</p> <p>4 MR. FERGUSON: Can I borrow some</p> <p>5 exhibit stickers? I hate to clog up the exhibit</p> <p>6 section of the depo, but I'm gonna mark that as</p> <p>7 Exhibit 7.</p> <p>8 (Deposition Exhibit 7 marked for</p> <p>9 identification.)</p> <p>10 MR. FERGUSON: And for the time being,</p> <p>11 I think I'm just gonna leave this in here just</p> <p>12 because it's kind of bulky and it's not tied</p> <p>13 together.</p> <p>14 So "Introductory Raman Spectroscopy"</p> <p>15 is Exhibit Number 7.</p> <p>16 Q. (BY MR. FERGUSON) The next item is</p> <p>17 something entitled "IR" -- does that stand for</p> <p>18 infrared?</p> <p>19 A. Yes.</p> <p>20 Q. -- "and Raman Spectroscopy: Principles and</p> <p>21 Spectral Interpretation" by Peter J. Larkin.</p> <p>22 And was that something that you</p> <p>23 selected to be included in the --</p> <p>24 A. Yes.</p>

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<p>1 Q. -- reference materials or that counsel 2 selected?</p> <p>3 A. I selected it.</p> <p>4 Q. And why did you select this particular --</p> <p>5 A. Just for balance, breadth. Just to get 6 typical reference books, of which there are many --</p> <p>7 Q. Okay. And --</p> <p>8 A. -- so I skimmed them electronically and 9 thought these would be good references in case any 10 one of you guys really wanted to be experts in Raman 11 spectroscopy.</p> <p>12 MR. FERGUSON: And I'm gonna mark the 13 Larkin --</p> <p>14 Q. (BY MR. FERGUSON) Is it a whole book or a 15 chapter?</p> <p>16 A. It's a book.</p> <p>17 MR. FERGUSON: -- the Larkin book as 18 Exhibit 8.</p> <p>19 (Deposition Exhibit 8 marked for 20 identification.)</p> <p>21 Q. (BY MR. FERGUSON) And did you utilize 22 either Exhibit 7 or Exhibit 8 in your work prior to 23 being retained in this matter to work on the paper 24 that we've been discussing?</p>	<p>1 A. Yes. That's Exhibit 5.</p> <p>2 Q. Okay.</p> <p>3 A. Should I wait for you to ask me a question 4 or can I just tell you it's Exhibit 5?</p> <p>5 Q. I think it works fine there.</p> <p>6 And then there's a book, looks like, 7 called "Modern Raman Spectroscopy" by Smith and 8 Dent. Has that been marked?</p> <p>9 A. No.</p> <p>10 Q. I didn't think so.</p> <p>11 MR. FERGUSON: And I'm gonna mark that 12 as Exhibit 10.</p> <p>13 (Deposition Exhibit 10 was marked for 14 identification.)</p> <p>15 Q. (BY MR. FERGUSON) Again, why is that 16 included here in this notebook?</p> <p>17 A. It's just for diversity.</p> <p>18 Q. Different reference that you might or 19 might not have referred to in the past?</p> <p>20 A. Correct.</p> <p>21 (Deposition Exhibit 11 was marked for 22 identification.)</p> <p>23 Q. (BY MR. FERGUSON) And then I don't think 24 I remember the Wang paper being discussed called</p>
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<p>1 A. I can't recall. There are a handful of 2 reference books that I've used over the years, and I 3 don't know whether I've referred to one of those or 4 not.</p> <p>5 Q. The next paper or item in the notebook --</p> <p>6 A. That's already marked. That's 6, I 7 believe.</p> <p>8 Q. Okay. The Musa article called "The use of 9 Raman spectroscopy to identify inorganic phases in 10 iatrogenic pathologic lesions of patients with 11 malignant pleural mesothelioma."</p> <p>12 A. It's marked Number 6.</p> <p>13 Q. It's Number 6. Okay. I won't remark it.</p> <p>14 Then the Pence paper called "Clinical 15 instrumentation and applications of Raman 16 spectroscopy," is that previously marked?</p> <p>17 A. I don't believe so.</p> <p>18 MR. FERGUSON: I'm gonna mark Pence as 19 Exhibit 9 and leave it in the notebook as well.</p> <p>20 (Deposition Exhibit 9 marked for 21 identification.)</p> <p>22 Q. (BY MR. FERGUSON) The next item is the 23 Caterina Rinaudo -- Rinaudo, R-i-n-a-u-d-o, article 24 from 2010.</p>	<p>1 "Understanding the Raman spectral features of 2 phyllosilicates" or phyllosilicates.</p> <p>3 A. I don't believe we discussed that paper.</p> <p>4 Q. And is the Wang paper one that you relied 5 on in developing your report in this matter or the 6 article that we've been discussing?</p> <p>7 A. I use that article to attempt to gain 8 familiarity with the properties of this class of 9 minerals, in part, but also to show how the Raman 10 spectra of this five classes, I think, of -- five 11 members of this class of minerals are distinctly 12 different. So distinctly different that you can 13 tell the difference by eye.</p> <p>14 Q. And the Wang paper actually involved 15 results that they say were significant for planetary 16 surface exploration, espe- -- especially Mars, 17 correct?</p> <p>18 A. I thought that was really interesting.</p> <p>19 Q. Okay. A different situation than what 20 we're dealing with here?</p> <p>21 A. Yes.</p> <p>22 Now, you skipped one. There was just 23 that one page, or did you not want me to comment on 24 that?</p>

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<p>1 Q. Well, thanks for reminding me.</p> <p>2 Actually --</p> <p>3 A. It was a textbook that's a -- that's an</p> <p>4 electronic resource and I included it because it's</p> <p>5 the most recent book that I could find on the</p> <p>6 subject.</p> <p>7 And in particular, it addresses a</p> <p>8 technique called confocal microscopy, which is a</p> <p>9 specialized way of carrying out Raman microscopy to</p> <p>10 achieve greater discrimination and spatial</p> <p>11 resolution.</p> <p>12 Q. All right. And what I'm going to mark is</p> <p>13 a page that's in the notebook. I'm marking it as</p> <p>14 Exhibit 12 that says, "See Electronic Copy of the</p> <p>15 Book Titled Confocal Raman Microscopy," correct?</p> <p>16 (Deposition Exhibit 12 was marked for</p> <p>17 identification.)</p> <p>18 A. Correct.</p> <p>19 Q. (BY MR. FERGUSON) Okay. Have we now</p> <p>20 marked everything that is in the notebook that you</p> <p>21 appeared with today?</p> <p>22 A. And if you're dying for a hard cover of</p> <p>23 the electronic resource, I have one in my car. Just</p> <p>24 kidding.</p>	<p>1 Q. Okay. And that's what you're doing here</p> <p>2 with this project; you're developing a novel</p> <p>3 experimental method, correct?</p> <p>4 MR. DEARING: Objection; form.</p> <p>5 A. It's not novel. It's a well-established</p> <p>6 method, particularly since the advent of lasers in</p> <p>7 the early 1960s.</p> <p>8 Q. (BY MR. FERGUSON) You are attempting to</p> <p>9 extract weak signals in the presence of significant</p> <p>10 background interference, correct?</p> <p>11 A. That's correct.</p> <p>12 Q. At page 2 of your report, you cite a very</p> <p>13 recent review --</p> <p>14 A. I believe that was the --</p> <p>15 MR. DEARING: Wait till he finishes</p> <p>16 his question.</p> <p>17 Q. (BY MR. FERGUSON) The very recent review</p> <p>18 which is footnoted Number 4. That's the Pence</p> <p>19 paper.</p> <p>20 Am I correct about that?</p> <p>21 A. So that may have been a typo as -- it</p> <p>22 should have been the book -- the 2018 book that I</p> <p>23 just referenced, so it's not the Pence paper --</p> <p>24 well, let me read this again more carefully. I'm</p>
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<p>1 Q. I think I'll pass on that for now.</p> <p>2 Could you turn, first, to your report</p> <p>3 in this matter?</p> <p>4 A. Yes.</p> <p>5 Q. Which is, again -- remind me of the</p> <p>6 exhibit number?</p> <p>7 A. Number 1.</p> <p>8 Q. So if you look under the Qualification</p> <p>9 section, there's a paragraph that's the third</p> <p>10 paragraph --</p> <p>11 A. Yes.</p> <p>12 Q. -- that -- I'm -- I'm gonna just read and</p> <p>13 ask you about the last sentence of that third</p> <p>14 paragraph under Qualifications.</p> <p>15 It says, "Although I use Raman</p> <p>16 spectroscopy and microscopy to investigate a number</p> <p>17 of different kinds of problems in science and</p> <p>18 engineering, an important theme in my work has</p> <p>19 always been developing novel experimental methods to</p> <p>20 extract very weak signals in the presence of</p> <p>21 significant background interference, expertise that</p> <p>22 proved essential for the current project," correct?</p> <p>23 Did I read that correctly?</p> <p>24 A. You read that correctly.</p>	<p>1 sorry.</p> <p>2 Q. Sure.</p> <p>3 A. (Examined exhibit.) Yes. That -- that --</p> <p>4 that's an error on my part. I apologize. That</p> <p>5 should have been the 2018 Confocal Raman Microscopy</p> <p>6 book.</p> <p>7 Q. So that footnote is footnoted wrong and it</p> <p>8 should be the -- the electronic book that we don't</p> <p>9 have?</p> <p>10 A. That's correct.</p> <p>11 Q. Okay. Well, why don't we turn to the</p> <p>12 Pence paper.</p> <p>13 A. Is the Pence paper still in the binder?</p> <p>14 Q. You're probably right. Maybe you can find</p> <p>15 it more quickly than I.</p> <p>16 A. Oh, yes.</p> <p>17 Q. Okay. And that's entitled "Clinical</p> <p>18 instrumentation and applications of Raman</p> <p>19 spectroscopy," correct?</p> <p>20 A. Correct, yes.</p> <p>21 Q. Can you turn to the summary, which is --</p> <p>22 again, I'd tell you the page number, but I have a</p> <p>23 slightly different version. I cut it off.</p> <p>24 A. Sure. Summary, yes.</p>

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<p>1 Q. Okay. Just reading a couple of sentences</p> <p>2 from that, it says in the first sentence of the</p> <p>3 summary, "Despite the impressive work presented here</p> <p>4 in a selection of clinical fields, there remain a</p> <p>5 number of challenges that stand in the way of</p> <p>6 clinical translation for Raman based technologies</p> <p>7 for widespread human use," correct?</p> <p>8 A. That's what it says.</p> <p>9 Q. Okay. And this is a 2016 article,</p> <p>10 correct?</p> <p>11 A. That's correct.</p> <p>12 Q. Then if you go to about two-thirds of the</p> <p>13 way down in the Summary paragraph --</p> <p>14 A. Okay.</p> <p>15 Q. -- you see where it says, "Preliminary</p> <p>16 work" -- sentence starting "Preliminary work"?</p> <p>17 A. Yes.</p> <p>18 Q. And it says, "Preliminary work on many of</p> <p>19 these aspects for clinical translation are ongoing,</p> <p>20 but continued effort is needed to facilitate the</p> <p>21 transition from benchtop to bedside," correct?</p> <p>22 A. Yes.</p> <p>23 Q. Okay. You can put that aside. I think</p> <p>24 I'm going back to your report now.</p>	<p>1 and tissues, correct?</p> <p>2 A. Correct.</p> <p>3 Q. Okay. And I think Mr. Chachkes may have</p> <p>4 asked you a couple questions about this, but with</p> <p>5 regard to the authors of the paper that you</p> <p>6 published just last summer --</p> <p>7 A. Yes.</p> <p>8 Q. -- and I think you indicated you're</p> <p>9 aware -- unaware that Dr. Fan had worked on</p> <p>10 litigated matters with Dr. Godleski, correct?</p> <p>11 A. That's correct.</p> <p>12 Q. Assuming that Dr. Fan did, in fact, do</p> <p>13 work with Dr. Godleski in the litigated matters,</p> <p>14 then that would make three of the six authors of the</p> <p>15 paper who had worked as paid experts for plaintiffs'</p> <p>16 counsel in the case, correct?</p> <p>17 MR. DEARING: Objection; form,</p> <p>18 inaccurate statement.</p> <p>19 A. I have no knowledge about it.</p> <p>20 Q. (BY MR. FERGUSON) But we know that you've</p> <p>21 worked as a paid expert, correct?</p> <p>22 A. Yes.</p> <p>23 Q. We know that Dr. Godleski has, correct?</p> <p>24 A. Correct.</p>
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<p>1 MR. DEARING: I guess I'm going to</p> <p>2 object to form to the last two questions about just</p> <p>3 reading excerpt -- excerpt from a study without</p> <p>4 asking the doctor any opinions about it.</p> <p>5 Q. (BY MR. FERGUSON) Are you at your report?</p> <p>6 Can you find your report for me?</p> <p>7 A. Sure.</p> <p>8 Q. Exhibit 1, as I recall.</p> <p>9 Okay. I think these questions have</p> <p>10 been covered, but not all these sentences have been</p> <p>11 read, so I'm gonna read it, then I'll ask you a</p> <p>12 question about it.</p> <p>13 Under Relevant Literature Review, you</p> <p>14 say, "There are dozens, if not hundreds, of papers</p> <p>15 written that demonstrate the application of Raman</p> <p>16 microscopy to a wide variety of problems in biology</p> <p>17 and medicine. It is a well-established technique in</p> <p>18 these fields. The literature describing use of</p> <p>19 Raman microscopy to identify inorganic particles in</p> <p>20 tissues is more limited," correct?</p> <p>21 A. Correct.</p> <p>22 Q. Okay. And that's the project that you're</p> <p>23 doing here.</p> <p>24 You're identifying inorganic particles</p>	<p>1 Q. And if, in fact, Dr. Fan has, then that</p> <p>2 would be three out of six, right, half?</p> <p>3 A. It seems to me you're asking me to</p> <p>4 speculate about whether he was or was not paid and I</p> <p>5 have no basis to speculate.</p> <p>6 Q. In your report, you indicated that the</p> <p>7 ovarian tissue which was involved in your study,</p> <p>8 quote, "followed long-term perineal talc exposure,"</p> <p>9 unquote.</p> <p>10 A. Correct.</p> <p>11 Q. And how did you obtain the information</p> <p>12 that it followed long-term perineal talc exposure?</p> <p>13 A. That's what Dr. Godleski told me. These</p> <p>14 were samples under his curation or whatever you guys</p> <p>15 call it.</p> <p>16 Q. So -- so your only information with regard</p> <p>17 to -- to the fact that the statement in your paper</p> <p>18 that it followed long-term perineal talc exposure</p> <p>19 was from Dr. Godleski, correct?</p> <p>20 A. Correct.</p> <p>21 Q. Well, you've made reference and there's</p> <p>22 been some discussion about PLM or polarized light</p> <p>23 microscopy, correct?</p> <p>24 A. Yes.</p>



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<p>1 Q. You would agree that PLM cannot</p> <p>2 specifically identify talc or any other particle,</p> <p>3 correct?</p> <p>4 A. I don't know that I would make a statement</p> <p>5 that boldly. From my limited understanding of PLM,</p> <p>6 it's possible it makes some inferences based on</p> <p>7 color patterns and things like that, but I'm not an</p> <p>8 expert in that field.</p> <p>9 I would assert that it is not nearly</p> <p>10 as definitive as Raman microscopy.</p> <p>11 Q. Is it your understanding that PLM can</p> <p>12 simply indicate whether or not the particles in</p> <p>13 question are birefringent?</p> <p>14 A. Yes.</p> <p>15 Q. Okay. And birefringence is a</p> <p>16 characteristic of many foreign particles, including</p> <p>17 talc and many others, correct?</p> <p>18 A. Correct.</p> <p>19 Q. So birefringence itself doesn't tell you</p> <p>20 what the particle is?</p> <p>21 A. It can. So early on we happened to see a</p> <p>22 particle of starch, I think it was, which shows a</p> <p>23 characteristic Maltese cross pattern, which is</p> <p>24 pretty easy to recognize, but I'm not a -- I'm not</p>	<p>1 And in this scientific article that</p> <p>2 was published without a citation, you just relied</p> <p>3 upon that statement by Dr. Godleski?</p> <p>4 A. Correct.</p> <p>5 Q. And tell me how it works in publishing.</p> <p>6 You were the first named author,</p> <p>7 correct?</p> <p>8 A. Yes.</p> <p>9 Q. Does that mean you're the main au- --</p> <p>10 author, the one who's responsible for the contents?</p> <p>11 A. It differs by field. So in my field,</p> <p>12 physics or chemical physics, I tend to put my name</p> <p>13 last.</p> <p>14 In biologically related areas, it</p> <p>15 seems to be customary to be the first author.</p> <p>16 And when we, in fact, evaluate people</p> <p>17 for promotion and tenure, we count first author</p> <p>18 publications. I have no idea why they do that in</p> <p>19 those fields, but it doesn't mean anything to me.</p> <p>20 Q. So how's that work in this case?</p> <p>21 A. I would say that John and I contributed</p> <p>22 equally.</p> <p>23 Q. I know there's been some discussion about</p> <p>24 the conflict of interest statement, and I don't want</p>
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<p>1 an expert in that area.</p> <p>2 Ken Smith just said, "Oh, look at</p> <p>3 this."</p> <p>4 So in some cases -- what I'm saying is</p> <p>5 in some cases it can identify particles.</p> <p>6 Q. You are not saying that you can identify</p> <p>7 talc by birefringents alone, are you?</p> <p>8 A. Absolutely. I'm not saying that.</p> <p>9 Q. There was a statement in your paper that</p> <p>10 says, "Talc particles in ovarian tissue samples that</p> <p>11 result from perineal talc use, in particular, are</p> <p>12 known to fall in the lower size range."</p> <p>13 Do you recall that statement?</p> <p>14 A. I recall that statement.</p> <p>15 Q. There's no citation to that statement.</p> <p>16 What was your source for the statement</p> <p>17 that talc particles from perineal talc use are known</p> <p>18 to fall in the lower size range?</p> <p>19 A. That's what Dr. Godleski wrote.</p> <p>20 Q. Okay. Again, the only thing you know</p> <p>21 about that is that Dr. Godleski told you that was</p> <p>22 the case --</p> <p>23 A. Correct.</p> <p>24 Q. -- correct?</p>	<p>1 to be redundant or repetitive of that, but I just</p> <p>2 have a question that I may have missed and I want to</p> <p>3 make sure it's covered.</p> <p>4 Under the Notes in the paper itself --</p> <p>5 and feel free to refer to it, if you like -- it</p> <p>6 says, "Declaration of Potential Conflicts of</p> <p>7 Interest. Alan Campion and John J. Godleski have</p> <p>8 served as consultants and provided expert testimony</p> <p>9 in talc and other environmental litigation,"</p> <p>10 correct?</p> <p>11 A. Correct.</p> <p>12 Q. That statement, the "Declaration of</p> <p>13 Potential Conflicts of Interest" doesn't say</p> <p>14 anything about the people or entities that you</p> <p>15 represented as part of your service as a consultant</p> <p>16 in providing expert testimony, correct?</p> <p>17 A. I'm not sure what you mean by that.</p> <p>18 Q. Sure. It doesn't say which side you're</p> <p>19 on, does it?</p> <p>20 A. No.</p> <p>21 Q. Okay. In order to inform the reader as to</p> <p>22 the significance of a conflict of interest for why</p> <p>23 there is a conflict of interest, would it not make</p> <p>24 sense to you to disclose who had hired you and who</p>

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<p>1 was paying you to provide consulting service and</p> <p>2 expert testimony?</p> <p>3 MR. DEARING: Objection; form.</p> <p>4 A. I don't think it is relevant. This was a</p> <p>5 scientific paper, and if I were approached by other</p> <p>6 people it's possible that I would agree to conduct</p> <p>7 similar research.</p> <p>8 I haven't. I don't necessarily</p> <p>9 anticipate, but I have no bias one way or the other.</p> <p>10 Q. (BY MR. FERGUSON) You've indicated you</p> <p>11 have no bias, but the purpose of the conflict of</p> <p>12 interest statement is so that the reader can make</p> <p>13 the determination as to whether or not there's a</p> <p>14 bias or not.</p> <p>15 A. Sure. And, I mean, you guys are lawyers,</p> <p>16 but the word "potential" seems to me to be pretty</p> <p>17 telling.</p> <p>18 Q. Do you -- do you believe, based on your</p> <p>19 experience in publishing papers before, that, in</p> <p>20 fact, you should have disclosed that you were being</p> <p>21 paid in conjunction with this paper by the Beasley</p> <p>22 Allen law firm or other law firms involved in this</p> <p>23 litigation?</p> <p>24 MR. DEARING: Objection; form.</p>	<p>1 or three or four experiments where the three of us,</p> <p>2 Godleski, Smith, and I, decided that this work was</p> <p>3 of sufficient interests to a wide scientific</p> <p>4 audience that it deserved publication on its own; in</p> <p>5 other words, a contr- -- a significant contribution</p> <p>6 to the scientific literature.</p> <p>7 So I think that being paid to produce</p> <p>8 this paper is a mischaracterization of what</p> <p>9 happened.</p> <p>10 Q. And that's your -- that's your position on</p> <p>11 it, correct?</p> <p>12 A. It's my opinion.</p> <p>13 Q. Okay. And that's your opinion.</p> <p>14 But the reader didn't have an</p> <p>15 opportunity to evaluate that potential bias that you</p> <p>16 were being paid by a law firm at the time you were</p> <p>17 writing this paper and for your work on that paper,</p> <p>18 correct?</p> <p>19 A. Correct.</p> <p>20 Q. One of the exhibits -- and you can</p> <p>21 probably tell me the number of it -- is the --</p> <p>22 Dr. Godleski's report in the Brower case.</p> <p>23 A. Yes.</p> <p>24 Q. Correct? And in that report he reported</p>
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<p>1 Misstates the evidence.</p> <p>2 Q. (BY MR. FERGUSON) Did you answer?</p> <p>3 A. Would you repeat the question, please.</p> <p>4 Q. Sure. Sure. In terms of actually</p> <p>5 disclosing a potential bias to readers of the</p> <p>6 article, based on your experience in publishing in</p> <p>7 the past, do you not believe that it would have been</p> <p>8 appropriate for you to disclose that you were being</p> <p>9 paid for your work in conjunction with this paper by</p> <p>10 the Beasley Allen law firm?</p> <p>11 A. I mean --</p> <p>12 MR. DEARING: Objection; form.</p> <p>13 A. May I respond?</p> <p>14 Q. (BY MR. FERGUSON) Please -- please do. I</p> <p>15 apologize. I -- I was waiting for your response. I</p> <p>16 thought you were thinking about your response.</p> <p>17 A. Oh, I am thinking about it.</p> <p>18 Q. Good.</p> <p>19 A. So I think it's important to make a clear</p> <p>20 distinction between the work that we were paid to</p> <p>21 do, which was see if we could develop this technique</p> <p>22 and the scientific publication that resulted.</p> <p>23 The scientific publication that</p> <p>24 resulted was spontaneous over the course of the two</p>	<p>1 that he had found what he claimed to be 27 talc</p> <p>2 particles, correct?</p> <p>3 A. Can you refer me to the page?</p> <p>4 Q. Oh, at the bottom of page 3.</p> <p>5 A. (Examined exhibit.) Okay.</p> <p>6 Q. Correct?</p> <p>7 A. Yep.</p> <p>8 Q. And he also found some, I believe, 184,</p> <p>9 say, other foreign particles in the tissue that he</p> <p>10 looked at, correct?</p> <p>11 A. Correct.</p> <p>12 Q. And he used SEM/EDS technology to make</p> <p>13 that determination, right?</p> <p>14 A. Yes.</p> <p>15 Q. Okay. Dr. Campion, do you have any</p> <p>16 opinion whatsoe- -- whatsoever as to where those</p> <p>17 particles, talc or not, in Miss Brower's tissue that</p> <p>18 Dr. Godleski claims to have found -- where they came</p> <p>19 from?</p> <p>20 A. Outside of my area -- not only is it</p> <p>21 outside of my area of expertise, I don't unders- --</p> <p>22 I have no -- I have no knowledge of the history of</p> <p>23 the case.</p> <p>24 Q. You're certainly not an expert whether</p>

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<p>1 inert articles such as talc or aluminum silicates</p> <p>2 can travel up the female reproductive tract to the</p> <p>3 ovaries, correct, out of your field?</p> <p>4 A. Correct, out of my field.</p> <p>5 Q. Also, you're not an expert on whether such</p> <p>6 particles would cause any disease, including ovarian</p> <p>7 cancer, right?</p> <p>8 A. Not based on my own direct knowledge.</p> <p>9 MR. FERGUSON: Well, since we have two</p> <p>10 minutes, why don't we go ahead and go off and . . .</p> <p>11 THE VIDEOGRAPHER: Going off the</p> <p>12 record. The time is 2:06 p.m.</p> <p>13 (A recess was taken from 2:06 p.m.</p> <p>14 to 2:15 p.m.)</p> <p>15 THE VIDEOGRAPHER: This marks the</p> <p>16 beginning of disk 3. Back on the record. The time</p> <p>17 is 2:15 p.m.</p> <p>18 Q. (BY MR. FERGUSON) Dr. Champion, we've</p> <p>19 taken a short break. Are you ready to proceed?</p> <p>20 A. Sure.</p> <p>21 Q. A couple of things just to clean up and</p> <p>22 then I'll -- then I should be done here within 15</p> <p>23 minutes or so.</p> <p>24 There was a discussion about work you</p>	<p>1 the same number.</p> <p>2 Q. Okay. There may be some that might</p> <p>3 disagree with that.</p> <p>4 A. I was teasing.</p> <p>5 Q. I know.</p> <p>6 But, also, there was a discussion</p> <p>7 about some changes in formatting that may have been</p> <p>8 made, changes to the article that you authored along</p> <p>9 with Dr. Godleski.</p> <p>10 Who suggested the changes in</p> <p>11 formatting? The journal?</p> <p>12 A. The journal. When it does it's just</p> <p>13 accepted, right, it says, "The final version might</p> <p>14 have minor changes in formatting."</p> <p>15 And that final version is available.</p> <p>16 There's a DOI. Anybody can look it up. I have a</p> <p>17 copy, but I wasn't asked to bring it with me.</p> <p>18 Q. Would you go to the Rinaudo paper, which I</p> <p>19 think we said was Number 5, Exhibit 5.</p> <p>20 A. You just handed it to me. I've got it</p> <p>21 right on top of my stack. Yes, sir.</p> <p>22 Q. Okay, great.</p> <p>23 And in this -- this is one of the</p> <p>24 articles that you've cited as your -- as materials</p>
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<p>1 had done since June up until the present and I was a</p> <p>2 little confused about that, probably my fault, but</p> <p>3 there was a meeting in Chicago for a few days; is</p> <p>4 that correct, at Renishaw?</p> <p>5 A. I honestly don't recall --</p> <p>6 Q. Okay.</p> <p>7 A. -- what I went up there for.</p> <p>8 Q. And do you have any estimate as to how</p> <p>9 many hours you have spent working on this matter</p> <p>10 since the last entry in the invoices that we have</p> <p>11 that are marked Exhibit 2, which is June 30th, 2018?</p> <p>12 A. I would have to go back and check my</p> <p>13 records.</p> <p>14 Q. And do you know how much -- what the total</p> <p>15 is for all the invoices that are marked as</p> <p>16 Exhibit 2?</p> <p>17 A. I believe earlier on I was asked --</p> <p>18 someone told me it was something of the order</p> <p>19 of \$190,000 or something like that.</p> <p>20 Q. I actually tried to add them up and got</p> <p>21 like 198,900.</p> <p>22 Does that sound like it's in the</p> <p>23 ballpark anyway?</p> <p>24 A. I'm a physical chemist. 198 and 190 are</p>	<p>1 that you relied on or reviewed in preparation for</p> <p>2 your -- your report, correct?</p> <p>3 A. (Examined exhibit.) In the sense that I</p> <p>4 wanted to demonstrate that other people were able to</p> <p>5 detect talc in tissue. That we were not the first</p> <p>6 and that it was possible to detect other kinds of</p> <p>7 minerals in tissue.</p> <p>8 So it was a way of supporting the</p> <p>9 viability of this technique as being a -- a</p> <p>10 generally applicable technique.</p> <p>11 Q. And if you would take a look at page 572.</p> <p>12 A. (Complied.) Yes.</p> <p>13 Q. Of Rinaudo paper in the upper right-hand</p> <p>14 corner, there's a sentence that starts with</p> <p>15 "Quantitative."</p> <p>16 It says, "Quantitative microanalyses</p> <p>17 are not possible because the studied</p> <p>18 particles/fibers are very small, incorporated in an</p> <p>19 unpolished matrix, and in a sample not perfectly</p> <p>20 flat, as well as being carried out under variable</p> <p>21 pressure conditions."</p> <p>22 And my question to you is: Do you</p> <p>23 agree, generally, that quantitative analysis is not</p> <p>24 possible with small particles in an unpolished, not</p>

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<p>1 flat, matrix?</p> <p>2 A. Well, if I'm reading that correctly,</p> <p>3 they're referring to SEM, and I'm not sufficiently</p> <p>4 expert in SEM to agree or disagree with that</p> <p>5 statement.</p> <p>6 Q. And I believe they are referring to</p> <p>7 SEM/EDS.</p> <p>8 You just don't have an opinion on</p> <p>9 that?</p> <p>10 A. No. I mean -- and I know they're</p> <p>11 referring to SEM/EDS because it says 20 kilovolts</p> <p>12 electric, accelerating voltage, et cetera, beam</p> <p>13 current, and stuff like that.</p> <p>14 Q. Well, you may not have an opinion on that.</p> <p>15 Their opinion from the Rinaudo paper</p> <p>16 is that you cannot do quantitative microanalysis</p> <p>17 with an unpolished matrix that is not perfectly</p> <p>18 flat, correct?</p> <p>19 MR. DEARING: Objection; form. It's</p> <p>20 beyond the scope of his expertise.</p> <p>21 A. If you're asking me if that's what they</p> <p>22 said, yes, that's what they said.</p> <p>23 Q. (BY MR. FERGUSON) Okay. Thank you.</p> <p>24 With regard to the paper you</p>	<p>1 Q. No, sir. It's something he said in a</p> <p>2 deposition.</p> <p>3 A. Well, I guess.</p> <p>4 MR. DEARING: I'm just gonna object to</p> <p>5 the form and the appropriateness of one expert</p> <p>6 commenting on the veracity of another expert's</p> <p>7 testimony.</p> <p>8 A. And there's also, I think some wiggle</p> <p>9 room, depending on what you mean by small. So --</p> <p>10 its specific sizes aren't -- well, I can't comment</p> <p>11 on what he said because I wasn't there.</p> <p>12 Q. (BY MR. FERGUSON) Do you -- would you</p> <p>13 agree that your article was the first in the history</p> <p>14 of science to deal with the issue of foreign</p> <p>15 particles in human tissues using Raman microscopy</p> <p>16 that was published in a prominent journal?</p> <p>17 MR. DEARING: Same objection.</p> <p>18 A. That's a judgment call. Who determines</p> <p>19 what's prominent?</p> <p>20 Q. (BY MR. FERGUSON) Apparently,</p> <p>21 Dr. Godleski.</p> <p>22 A. Well, I don't remember the impact factor,</p> <p>23 but I chose to journal in part because it has a high</p> <p>24 impact factor.</p>
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<p>1 published -- and I'm -- I've been skipping back and</p> <p>2 forth.</p> <p>3 A. Sure.</p> <p>4 Q. I want to make sure you -- I'm letting you</p> <p>5 know which one I'm talking about. Your paper,</p> <p>6 published along with Dr. Godleski.</p> <p>7 A. Yes.</p> <p>8 Q. Would you agree with me that as far as</p> <p>9 using Raman spectroscopy, this article was the first</p> <p>10 one to appear that set out the use of Raman</p> <p>11 microscopy or spectroscopy to analyze small</p> <p>12 particles in tissue?</p> <p>13 A. No. I believe I said in my report that</p> <p>14 this 1984 article was the first one that I could</p> <p>15 find.</p> <p>16 Q. Is that small tiss- -- small particles in</p> <p>17 a tissue matrix?</p> <p>18 A. I believe they were small, yes.</p> <p>19 Q. So you -- if Dr. Godleski testified to</p> <p>20 exactly that, that this was the first article to</p> <p>21 appear that set out the use of Raman -- Raman</p> <p>22 spectroscopy to analyze small particles in tissue,</p> <p>23 you disagree with him?</p> <p>24 A. Is that something he wrote?</p>	<p>1 Q. So you do agree that the -- the --</p> <p>2 A. I agree that this has perhaps the widest</p> <p>3 possible audience for work of this type. I think</p> <p>4 that's a fair statement.</p> <p>5 Q. Okay.</p> <p>6 MR. FERGUSON: Okay. I think that's</p> <p>7 all I have, Dr. Campion. Thank you for your time,</p> <p>8 sir.</p> <p>9 THE WITNESS: Thank you.</p> <p>10 MR. DEARING: Anybody else? No?</p> <p>11 Doctor, I have a few questions for</p> <p>12 you.</p> <p>13 EXAMINATION</p> <p>14 BY MR. DEARING:</p> <p>15 Q. You've been asked several questions about</p> <p>16 your publication with Dr. Godleski. Let me just ask</p> <p>17 you point-blank.</p> <p>18 Did the plaintiffs' attorneys in this</p> <p>19 litigation ask you to publish an article on Raman</p> <p>20 spectroscopy for your research?</p> <p>21 MR. FERGUSON: Objection; leading.</p> <p>22 A. No.</p> <p>23 MR. CHACHKES: Same objection.</p> <p>24 A. No. The decision to publish arose</p>

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<p>1 spontaneously over the course of time as we became</p> <p>2 serious collaborators.</p> <p>3 Q. (BY MR. DEARING) Did the plaintiffs'</p> <p>4 lawyers even suggest to you the idea of publishing</p> <p>5 your results?</p> <p>6 MR. CHACHKES: Objection; leading.</p> <p>7 MR. FERGUSON: Same objection.</p> <p>8 A. No.</p> <p>9 Q. (BY MR. DEARING) You have your CV in</p> <p>10 front of you in this binder, if you need it, but</p> <p>11 would you give me a summary of your education,</p> <p>12 training, and experience with regard to Raman</p> <p>13 spectroscopy and particle identification?</p> <p>14 A. Restricted to particle identification?</p> <p>15 Q. Well, let's start more general, with your</p> <p>16 bachelor's degree and just your education and</p> <p>17 training.</p> <p>18 A. So in my bachelor's degree, I did</p> <p>19 undergraduate research at Oak Ridge National</p> <p>20 Laboratory in the University of Tennessee in</p> <p>21 radiation chemistry, and published three papers,</p> <p>22 when I was 20 or 21 years old, something like that.</p> <p>23 Then I moved to UCLA, where I studied</p> <p>24 different kinds of molecular spectroscopy. I did so</p>	<p>1 A. I started '68, graduated '72.</p> <p>2 Q. What was your degree in?</p> <p>3 A. My degree was in chemistry.</p> <p>4 Q. Okay. And then you went on to get a</p> <p>5 Ph.D.?</p> <p>6 A. At UCLA in chemical physics.</p> <p>7 Q. In looking at your CV, it looks like after</p> <p>8 you obtained your Ph.D. you started a career in</p> <p>9 research science; is that correct?</p> <p>10 A. I did a post-doctoral fellowship. So it's</p> <p>11 typical after you do a Ph.D. to do a post-doctoral</p> <p>12 fellowship, which is analogous to doing a residency</p> <p>13 after your M.D. That was at UC Berkeley.</p> <p>14 Q. Was there a particular field of study?</p> <p>15 A. That's when I first went into the field of</p> <p>16 surface physics, because at that time it seemed to</p> <p>17 have great potential in helping us understand</p> <p>18 catalytic processes, like your catalytic converter,</p> <p>19 microelectronics, all sorts of stuff like that. So</p> <p>20 it was not only a new intellectual venue for me, it</p> <p>21 had real-world applications that I thought would be</p> <p>22 interesting. So that's why I chose Berkeley.</p> <p>23 Q. Okay. And would you walk us through your</p> <p>24 other research and other professional experience?</p>
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<p>1 many different topics that I wanted to call my</p> <p>2 dissertation "A random walk through molecular</p> <p>3 spectroscopy."</p> <p>4 So we did microwave optical double</p> <p>5 resonance, liquid helium temperatures.</p> <p>6 The most relevant paper from my</p> <p>7 graduate school days was the "Time-resolved</p> <p>8 resonance Raman spectroscopy of bacterial</p> <p>9 rhodopsin," and that was the first Raman spectrum</p> <p>10 that I ever took.</p> <p>11 This was a way of measuring the</p> <p>12 conformational change in a protein in realtime using</p> <p>13 a pulse probe technique, and we were the first in</p> <p>14 the world to report that in nature, so my interest</p> <p>15 in Raman goes way back.</p> <p>16 Q. Let me stop you and --</p> <p>17 A. Yeah.</p> <p>18 Q. -- just talk about your education</p> <p>19 specifically.</p> <p>20 A. Oh, I'm sorry.</p> <p>21 Q. Where did you get your bachelor's degree?</p> <p>22 A. I went to a little hippie college in</p> <p>23 Florida called New College.</p> <p>24 Q. Okay. What --</p>	<p>1 A. Oh, okay. So where is that?</p> <p>2 Q. I'm looking specifically on the second</p> <p>3 page of your CV -- actually, it's still on the first</p> <p>4 page of your CV.</p> <p>5 A. So my research interests had been surface</p> <p>6 physics and chemistry.</p> <p>7 And what do I mean by "surface</p> <p>8 physics"? I mean, how do molecules react with the</p> <p>9 surfaces of solids under very well-controlled</p> <p>10 conditions.</p> <p>11 So I built a surface Raman</p> <p>12 spectrometer. So ultra high vacuum is defined to be</p> <p>13 something like -- well, I have to do this in my</p> <p>14 head. Let's just call it 1 -- it's 10 to minus 13,</p> <p>15 10 to minus 14-atmosphere, something like that,</p> <p>16 okay. There's nothing in the vacuum chamber that I</p> <p>17 didn't put there.</p> <p>18 And I designed and built that vacuum</p> <p>19 chamber so we could do Raman spectrometry on</p> <p>20 atomically flat, smooth surfaces. We were the first</p> <p>21 ones in the world to do that thereby disproving</p> <p>22 about 50 perfectly reasonable theories of the nature</p> <p>23 of the interaction of molecules and surfaces in</p> <p>24 this -- using a Raman technique.</p>

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<p>1 That work was so successful that it</p> <p>2 got me invited to be a plenary speaker at an</p> <p>3 American Physical Society March meeting, which is</p> <p>4 a -- the meeting of the solid state physics</p> <p>5 community, and that single experiment is what got me</p> <p>6 tenure. So I built that first Raman spectroscopy.</p> <p>7 So . . .</p> <p>8 Q. Okay. And describe your career since</p> <p>9 then.</p> <p>10 A. So I've just worked on a variety of</p> <p>11 problems of interest. I -- I've enjoyed the extra</p> <p>12 research part of my job as much as I've enjoyed the</p> <p>13 research part of my job.</p> <p>14 I was privileged enough to win a</p> <p>15 number of prestigious teaching awards early on.</p> <p>16 I've worked on curriculum development. Continue to</p> <p>17 work on curriculum development.</p> <p>18 I enjoy public policy work, and so I</p> <p>19 was a member of the governing board for the Council</p> <p>20 for Chemical Research, which represents the entire</p> <p>21 chemical research industry in DC. Not supposed to</p> <p>22 be a lobbying group, but we were supposed to inform,</p> <p>23 I think was the buzz word.</p> <p>24 Then I was also a member of the</p>	<p>1 first time, an advanced graduate level course in</p> <p>2 molecular spectroscopy, which is my area of</p> <p>3 long-term interest.</p> <p>4 Q. And that would include Raman spectroscopy?</p> <p>5 A. Yes, that would include Raman</p> <p>6 spectroscopy. I can show you the syllabus. I even</p> <p>7 put Raman spectroscopy in my freshman chemistry</p> <p>8 book.</p> <p>9 Q. Okay.</p> <p>10 A. And probably the thing that's interested</p> <p>11 me the most over the last four or five years was the</p> <p>12 development of this upper division of physical</p> <p>13 chemistry laboratory.</p> <p>14 P chem labs, until I took this one</p> <p>15 over, basically were designed to, quote, "show that</p> <p>16 the stuff that's in the textbooks is actually real,"</p> <p>17 which I thought was really boring, okay. They're</p> <p>18 all classical experiments.</p> <p>19 So I got a quarter of a million</p> <p>20 dollars out of the Dean's office and I designed 12</p> <p>21 different experiments that required students to</p> <p>22 assemble, manipulate, design, interpret data. In</p> <p>23 other words, they had to do things with their hands,</p> <p>24 not just drop something into a machine and push a</p>
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<p>1 assessment committee for the National Institute of</p> <p>2 Standards and Technology, which is one of only two</p> <p>3 national labs that has to be reviewed annually, or</p> <p>4 had to be reviewed annually. So I went four times a</p> <p>5 year, looked at all of their programs and ended up</p> <p>6 doing a report that ultimately went to Congress</p> <p>7 through the Department of Commerce. So I enjoy</p> <p>8 those kinds of interactions.</p> <p>9 Q. Tell us about your -- your current</p> <p>10 teaching obligations.</p> <p>11 A. Yes. So since I have stopped doing</p> <p>12 research, I teach two and sometimes three courses,</p> <p>13 which I'm happy to do.</p> <p>14 I teach the honors freshman chemistry</p> <p>15 course using the book that I wrote. I'm teaching</p> <p>16 that right now. I always try to teach courses as a</p> <p>17 two-semester sequence so I can get to know my</p> <p>18 students during the course of a year.</p> <p>19 And then I'm also teaching the junior/</p> <p>20 senior level physical chemistry course which is</p> <p>21 classical thermodynamics, quantum mechanics. So I'm</p> <p>22 an expert in quantum mechanics. Probably my</p> <p>23 favorite subject to this day.</p> <p>24 I'm going to teach the spring, for the</p>	<p>1 button, so the students learned electronics, optics,</p> <p>2 microscopy. I mean, I can rattle off briefly the</p> <p>3 experiments.</p> <p>4 We measured lateral diffusion in model</p> <p>5 cell membranes.</p> <p>6 We used a scanning tunneling</p> <p>7 microscope to image materials.</p> <p>8 Used the SDM to learn about the</p> <p>9 electronic properties of semiconductors and metals.</p> <p>10 I have a Raman set of experiments</p> <p>11 where they do surface-to-hand Raman spectroscopy and</p> <p>12 also light scattering.</p> <p>13 There's an NMR experiment where the</p> <p>14 students learn the physical origins of NMR</p> <p>15 relaxation processes, and it's a very simple</p> <p>16 experiment, but the instrument's so sophisticated,</p> <p>17 at the end, they can do -- and this is a three-week</p> <p>18 experiment -- at the end, they can do a 3-D MRI of</p> <p>19 anything you want. A pepper, which is pretty cool.</p> <p>20 And then some more spectroscopy</p> <p>21 experiments, and we wrap it up with a module on</p> <p>22 computational quantum chemistry which is now</p> <p>23 accurate enough that you can put it on your laptop</p> <p>24 and do accurate quantum chemical calculations.</p>



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<p>1 Q. In looking through your chemical 2 publication lists, it looks like you have 134 or so 3 publications. 4 With regard to the methodology that 5 you used in this case, as you articulate in your 6 report, have you ever published that methodology in 7 a peer-reviewed journal? 8 A. What -- what methodology? 9 Q. Well, the Raman spectroscopy techniques 10 that you used in this case that you describe in your 11 report and that you've been testifying about today, 12 have you published in that area? 13 A. Well, we -- 14 MR. CHACHKES: Objection; leading. 15 MR. FERGUSON: Same objection. 16 A. So we have one article in which we 17 identified chemical nature of a defect on a 18 semiconductor manufacturing process. Several papers 19 where we were able to quantify strain and strained 20 silicon, in collaboration with Sematech and with 21 Texas Instruments. Those are the ones that I can 22 recall off the top of my head. 23 Q. (BY MR. DEARING) Okay. Did you invent 24 the Raman spectroscopy technique to identify</p>	<p>1 level of understanding whatsoever, that some sort of 2 inelastic light scattering had occurred, because 3 these were all colorless materials and therefore 4 could not be fluorescent. That was what he did. 5 Q. Okay. 6 A. Never published a spectrum. Two Russians 7 published the spectrum six weeks later, and he never 8 got any credit for it. 9 Q. You also made reference to several 10 databases that you use as references or standards in 11 your work. 12 Can you describe what those databases 13 actually are in reference to Raman spectroscopy? 14 A. Sure. So these are curated, for lack of a 15 better word, by individuals interested in geology 16 and neurology, and scientists are invited to 17 contribute samples, and there must be some sort of 18 internal validation by the people who curate the 19 database. But if you look at -- and I think I 20 could -- if you look at any of the databases, you 21 will see the origin of the sample, typically the 22 elemental composition, the experimental conditions, 23 the polarization of the laser, the color of the 24 laser, and that sort of thing.</p>
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<p>1 particles? 2 A. No. 3 MR. FERGUSON: Objection; leading. 4 A. And I -- and there are references. 5 Q. (BY MR. DEARING) To your knowledge, how 6 long has that methodology been in existence? 7 A. I believe I said that the first article 8 that I read was dated back to 1984. 9 Q. When was Raman spectroscopy invented? 10 A. 1928. 11 Q. Is the technique used today substantially 12 similar to the technique used in 1928 when it was 13 developed? 14 A. Well, that's a funny story, if you give me 15 30 seconds. 16 So Raman took a piece of blue glass 17 and a piece of yellow glass. 18 Q. Okay. 19 A. And if you take blue and yellow, which are 20 complementary colors, and you point them at the sun, 21 you get black, and if you put a liquid, any old 22 liquid in between them, then you see the yellow 23 light transmitted. 24 And so he concluded, with no molecular</p>	<p>1 Q. Okay. So how do you apply those databases 2 to the work that you're doing with Raman? 3 A. Well, the easiest ones for me to use are 4 the ones that have search functions built in. We've 5 talked about that earlier. 6 So the Leon database has a 7 particularly easy-to-use search function. The 8 Renishaw database is built into the instrument at 9 Renishaw. I don't have that database independently. 10 I could get it, but I don't have it. 11 And so when you take a spectrum and 12 you click, it'll do a search of the database and 13 tell you what matches. So I -- and then the other 14 databases are more cumbersome. You have to sort of 15 manually look and see what the peak frequencies are, 16 you know, more or less by using a ruler and seeing 17 where the peak intersects the x-axis. 18 Q. Based on your training and education and 19 experience, do you consider yourself an expert in 20 identifying materials and particles, whether mineral 21 or other, with Raman spectroscopy? 22 A. Yes. 23 Q. And I believe you testified that you 24 haven't done a lot of this, but could you identify</p>

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<p>1 asbestos fibers with Raman spectroscopy, if you were 2 asked to?</p> <p>3 A. Other people have --</p> <p>4 MR. FERGUSON: Objection; form.</p> <p>5 MR. CHACHKES: Objection; leading.</p> <p>6 A. -- so I can't imagine that I couldn't.</p> <p>7 Q. (BY MR. DEARING) Okay. You were also 8 asked several questions about some of the tissue 9 samples from Miss Brower.</p> <p>10 And let me ask you. If Miss Brower 11 testified that she used Johnson &amp; Johnson Baby 12 Powder for feminine hygiene, and I'm talking about 13 perineal use, and if those particles migrated to the 14 ovaries, as Dr. Godleski has suggested, and that 15 Dr. Godleski found particles of talc in the ovaries, 16 do you believe that the talc particles you were 17 looking at in the Brower case were Johnson &amp; Johnson 18 Baby Powder particles?</p> <p>19 MR. FERGUSON: Objection.</p> <p>20 MR. CHACHKES: Objection.</p> <p>21 MR. FROST: Objection.</p> <p>22 MR. FERGUSON: Objection; calls for 23 speculation. Leading.</p> <p>24 MR. CHACHKES: Join.</p>	<p>1 out of his area of expertise. Speculation.</p> <p>2 MR. CHACHKES: I'll join his</p> <p>3 objections. Also, it's leading.</p> <p>4 A. That seems to be a reasonable conclusion</p> <p>5 to me.</p> <p>6 Q. (BY MR. DEARING) Okay. And the 7 techniques and methodologies that you used, as 8 described in your report, have those methodologies 9 and techniques been published in peer-reviewed 10 journals by other scientists?</p> <p>11 MR. CHACHKES: Objection; leading.</p> <p>12 MR. FERGUSON: Same objection.</p> <p>13 A. Well, we discussed two or three of the 14 other references cited extensively this morning.</p> <p>15 Q. (BY MR. DEARING) Right. Are there more 16 than two or three publications of Raman spectroscopy 17 and particle identification that you're aware of?</p> <p>18 A. I haven't found more than a handful.</p> <p>19 Q. You were asked some questions about the 20 Rinaudo paper, Exhibit Number 5.</p> <p>21 Would you pull that out, please.</p> <p>22 A. Sure. Yes.</p> <p>23 Q. And one of the questions that you were 24 asked was by Mr. Chachkes, and that was whether the</p>
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<p>1 A. One could answer that question in a 2 different way. If you look at the last paragraph of 3 his expert testimony, whatever you call that, and 4 based on my extensive experience with him, he -- his 5 science is impeccable, okay. He's a remarkable 6 scientist, great breadth and depth of knowledge. 7 And I've spent many, many hours with him talking 8 science over a wide range of subjects. He knows his 9 stuff. And so if an expert draws that conclusion, 10 I'm inclined to agree with it.</p> <p>11 MR. SILVER: Move to strike as 12 nonresponsive.</p> <p>13 MR. FERGUSON: Same objection.</p> <p>14 MR. CHACHKES: Also move to strike as 15 speculative.</p> <p>16 Q. (BY MR. DEARING) So my question is a 17 little more specific; and that is: If the talcum 18 powder used by Miss Brower was Johnson &amp; Johnson 19 Baby Powder, used perineally, and that powder 20 migrated to the ovaries or other gynecologic tissues 21 that Dr. Godleski and you analyzed, do you believe 22 that the talc particles that you found were likely 23 Johnson &amp; Johnson Baby Powder particles?</p> <p>24 MR. FERGUSON: Object to form. Way</p>	<p>1 Raman methodology used in the Rinaudo paper has been 2 duplicated or repeated, to your knowledge.</p> <p>3 And my question to you is: Did you 4 use essentially the same or substantially similar 5 technique and methodology with your Raman analysis 6 that Rinaudo and the other scientists used in this 7 paper?</p> <p>8 MR. CHACHKES: Objection; leading.</p> <p>9 MR. FERGUSON: Same objection.</p> <p>10 A. Yes, it was substantially the same. I 11 mean, the designs of the spectrometer was different, 12 the laser frequency was different, but in principle, 13 all the components are the same.</p> <p>14 Q. (BY MR. DEARING) Okay. And Mr. Chachkes 15 also asked you a question implying that this paper 16 does not even mention the word "chrysotile"; 17 although -- so I want to ask you.</p> <p>18 Turn to page 576 of this paper, if you 19 would, in the Conclusion, and in particular, look 20 over in the right-hand column --</p> <p>21 A. Ah, yes.</p> <p>22 Q. -- at the top.</p> <p>23 So would you just read that first 24 sentence, please, where it says, "The Raman</p>

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<p>1 spectra."</p> <p>2 A. "The Raman spectra of the two minerals,</p> <p>3 talc and chrysotile, show bands at different</p> <p>4 wavenumbers, allowing a rapid and certain</p> <p>5 identification of the mineral phase."</p> <p>6 Q. And that's a summary finding of</p> <p>7 Dr. Rinaudo and the other scientists, right?</p> <p>8 A. Correct.</p> <p>9 Q. So if Mr. Chachkes suggested to you that</p> <p>10 this paper doesn't even mention chrysotile, he's</p> <p>11 absolutely being dishonest with you, isn't he?</p> <p>12 MR. FERGUSON: Object to form.</p> <p>13 MR. CHACHKES: Objection; leading.</p> <p>14 A. Correct.</p> <p>15 Q. (BY MR. DEARING) He wasn't being truthful</p> <p>16 with his questions, was he?</p> <p>17 A. No.</p> <p>18 MR. FERGUSON: Object to form.</p> <p>19 MR. CHACHKES: Objection.</p> <p>20 Q. (BY MR. DEARING) You think he was trying</p> <p>21 to mislead you?</p> <p>22 MR. CHACHKES: Objection.</p> <p>23 MR. FERGUSON: Same objection.</p> <p>24 A. I have no idea what his intention was.</p>	<p>1 Q. -- more information?</p> <p>2 A. -- would've asked me to add more</p> <p>3 information, for sure.</p> <p>4 MR. CHACHKES: Same objection.</p> <p>5 MR. FERGUSON: Same objection.</p> <p>6 Q. (BY MR. DEARING) You were also asked</p> <p>7 several questions about your plans after this</p> <p>8 deposition.</p> <p>9 If the plaintiff attorneys were to</p> <p>10 come to you and ask you to perform analysis on</p> <p>11 specific plaintiff tissues to determine whether</p> <p>12 there are particles of talc or perhaps asbestos, is</p> <p>13 that something you feel qualified to do?</p> <p>14 A. Yes.</p> <p>15 MR. FERGUSON: Object to form.</p> <p>16 Q. (BY MR. DEARING) Is that something you</p> <p>17 would be willing to do?</p> <p>18 A. Yes.</p> <p>19 Q. Assuming we worked out all the details?</p> <p>20 A. Yes.</p> <p>21 Q. You were also asked early on about why you</p> <p>22 analyzed the number of slides that you analyzed, and</p> <p>23 I don't remember specifically what your answer was,</p> <p>24 but my question is: If you were to analyze a slide</p>
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<p>1 Q. (BY MR. DEARING) You were also asked</p> <p>2 several questions about the conflict of interest</p> <p>3 statement in your publication with Dr. Godleski and</p> <p>4 the others.</p> <p>5 And if the publisher or the editor</p> <p>6 felt that your statement of conflict of interest was</p> <p>7 somehow inadequate or needed more information, based</p> <p>8 on your experience and all the publications that</p> <p>9 you've worked on in your career for peer-reviewed</p> <p>10 journals, would that editor or publisher have asked</p> <p>11 you to add information to that?</p> <p>12 MR. CHACHKES: Objection; leading.</p> <p>13 MR. FERGUSON: Same objection.</p> <p>14 A. Well, it's a pretty extensive</p> <p>15 certification required, so . . .</p> <p>16 Q. (BY MR. DEARING) So, in short, if the</p> <p>17 publisher or editor felt that your statement of</p> <p>18 conflict of interest was somehow inadequate or</p> <p>19 needed more information, would --</p> <p>20 (Speaking simultaneously.)</p> <p>21 A. The editor would've --</p> <p>22 Q. (BY MR. DEARING) -- would you have been</p> <p>23 asked to add --</p> <p>24 A. The editor --</p>	<p>1 of tissue and identify talc particles human -- using</p> <p>2 Raman spectroscopy, would it have been -- and you</p> <p>3 reported on that in this article, would it have been</p> <p>4 redundant for you to continue to report the same</p> <p>5 findings of talc in other slides?</p> <p>6 MR. CHACHKES: Objection.</p> <p>7 MR. FERGUSON: Same objection.</p> <p>8 MR. CHACHKES: Leading.</p> <p>9 A. It might have been useful to establish</p> <p>10 reproducibility of the technique, but to the extent</p> <p>11 that we looked at other slides, reproducibility was</p> <p>12 pretty solid. It was really solid and that's in --</p> <p>13 that's in our paper.</p> <p>14 Q. (BY MR. DEARING) So you satisfied your</p> <p>15 own necessity to prove that it was repeatable</p> <p>16 without regard to whether you actually published it</p> <p>17 in the paper, all of the different findings?</p> <p>18 A. Well, in the paper we referred to</p> <p>19 reproducibility of the frequencies of a series of</p> <p>20 particles in each of the three particular samples</p> <p>21 that we looked at and the reproducibility was</p> <p>22 remarkable.</p> <p>23 Q. How would you describe your level of</p> <p>24 confidence when identifying a particle such as talc</p>

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<p style="text-align: right;">Page 198</p> <p>1 with Raman spectroscopy, even in tissue?</p> <p>2 A. I would say that it's unequivocal.</p> <p>3 I would say I'm a hundred percent</p> <p>4 confident.</p> <p>5 I would say I'm completely confident.</p> <p>6 I mean, there's millions of adjectives.</p> <p>7 I have absolutely no doubt that when</p> <p>8 we say it's talc, it's talc.</p> <p>9 Q. You were also asked several questions</p> <p>10 about whether you knew about the different grades of</p> <p>11 talc.</p> <p>12 And if I were to tell you that grades</p> <p>13 of talc typically describe the -- the purity of the</p> <p>14 talc or the presence of impurities with the talc,</p> <p>15 does the grade of talc make any difference in your</p> <p>16 determination as to whether the particle is, in</p> <p>17 fact, talc?</p> <p>18 A. No.</p> <p>19 MR. FERGUSON: Object to form.</p> <p>20 MR. CHACHKES: Objection; leading.</p> <p>21 Q. (BY MR. DEARING) Is there any significant</p> <p>22 difference in Raman spectroscopy in the methodology</p> <p>23 or technique in identifying minerals versus other</p> <p>24 type of inert materials?</p>	<p style="text-align: right;">Page 200</p> <p>1 that's okay. It's only a few questions.</p> <p>2 FURTHER EXAMINATION</p> <p>3 BY MR. CHACHKES:</p> <p>4 Q. Did you disclose to the journal in which</p> <p>5 you published your publication that your research</p> <p>6 was funded by plaintiffs' lawyers?</p> <p>7 MR. DEARING: Objection; form.</p> <p>8 Mischaracterizes his testimony.</p> <p>9 A. No.</p> <p>10 Q. (BY MR. CHACHKES) Did you talk to any</p> <p>11 Raman spectroscopy specialist who focuses on</p> <p>12 minerals in -- at -- ever?</p> <p>13 A. No.</p> <p>14 Q. If a specialist in Raman spectroscopy for</p> <p>15 identifying minerals were to tell you there are</p> <p>16 unique problems and issues in using Raman</p> <p>17 spectroscopy for minerals, do you believe you will</p> <p>18 have the expertise to disagree with that expert?</p> <p>19 A. I would vigorously dispute that assertion.</p> <p>20 Q. Okay. Yet you don't know, for example,</p> <p>21 what special Raman issues are raised by solid</p> <p>22 solution series?</p> <p>23 MR. DEARING: Objection; form.</p> <p>24 A. Correct.</p>
<p style="text-align: right;">Page 199</p> <p>1 A. The experimental setup is the same. There</p> <p>2 might be some slight variations required to</p> <p>3 accommodate samples of different sizes and</p> <p>4 morphologies and that sort of thing, but the basic</p> <p>5 idea is that you have a microscope with a laser and</p> <p>6 something that measures the intensity of the emitted</p> <p>7 radiation or the scattered radiation at different</p> <p>8 frequencies. So it's a perfectly general technique.</p> <p>9 Q. Is your level of confidence with regard to</p> <p>10 particle identification the same whether you're</p> <p>11 identifying minerals or nonmineral materials?</p> <p>12 A. Yes.</p> <p>13 Q. Does the fact that Dr. Godleski selected</p> <p>14 the slides for Raman spectroscopy affect the</p> <p>15 veracity or the accuracy of the Raman analysis</p> <p>16 results?</p> <p>17 A. No.</p> <p>18 Q. And have all of your statements and -- has</p> <p>19 all of your testimony today been offered to a</p> <p>20 reasonable degree of scientific certainty?</p> <p>21 A. Yes.</p> <p>22 MR. DEARING: I think that's all I</p> <p>23 have right now.</p> <p>24 MR. CHACHKES: Short redirect if</p>	<p style="text-align: right;">Page 201</p> <p>1 Q. (BY MR. CHACHKES) Okay. And you don't</p> <p>2 know whether or not Raman spectroscopy can identify</p> <p>3 the difference between asbestiform and</p> <p>4 nonasbestiform minerals?</p> <p>5 A. It has been reported in the literature,</p> <p>6 but I'm not an expert.</p> <p>7 Q. Okay. Whether the same mineral -- whether</p> <p>8 it's an asbestiform or nonasbestiform habit, whether</p> <p>9 Raman spectroscopy can determine that, you don't</p> <p>10 know?</p> <p>11 A. Not firsthand.</p> <p>12 Q. Okay. And you've never talked to any</p> <p>13 Raman specialist about the special issues that arise</p> <p>14 from mineral identification?</p> <p>15 A. No.</p> <p>16 MR. CHACHKES: Okay. No further</p> <p>17 questions.</p> <p>18 MR. SILVER: Can we go off the record</p> <p>19 for a minute so we can switch places?</p> <p>20 THE VIDEOGRAPHER: Going off the</p> <p>21 record. The time is 2:53 p.m.</p> <p>22 (A recess was taken from 2:53 p.m.</p> <p>23 to 2:57 p.m.)</p> <p>24 THE VIDEOGRAPHER: Back on the record.</p>

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1 The time is 2:57 p.m. This concludes the deposition	1 I, ALAN CAMPION, Ph.D., have read the
2 of Dr. Alan Campion.	2 foregoing deposition and hereby affix my signature
3 Going off the record. The time is	3 that same is true and correct, except as noted
4 2:58 p.m.	4 above.
5 (Discussion off the video record.)	5 _____
6 MR. CHACHKES: And then we maintain	6 ALAN CAMPION, Ph.D.
7 our objections stated at the end of the direct	7
8 and --	8 THE STATE OF _____)
9 MR. FERGUSON: And we join in	9 COUNTY OF _____)
10 Johnson & Johnson objections and continue those	10 Before me, _____, on
11 objections as well.	11 this day personally appeared ALAN CAMPION, Ph.D.,
12 MS. APPEL: And PCPC also joins in the	12 known to me (or proved to me under oath or through
13 objections to continue the deposition.	13 _____) (description of
14 MR. DEARING: We obviously object to	14 identity card or other document) to be the person
15 keeping the deposition open.	15 whose name is subscribed to the foregoing instrument
16	16 and acknowledged to me that they executed the same
17 (Deposition concluded at 2:58 p.m.,	17 for the purposes and consideration therein
18 January 9, 2019.)	18 expressed.
19	19 Given under my hand and seal of office this
20	20 _____ day of _____, 2019.
21	21
22	22 _____
23	23 NOTARY PUBLIC IN AND FOR
24	24 THE STATE OF _____

  

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1 CHANGES AND SIGNATURE	1 IN THE UNITED STATES DISTRICT COURT
2 WITNESS NAME: ALAN CAMPION, Ph.D.	2 FOR THE DISTRICT OF NEW JERSEY
3 DATE: JANUARY 9, 2019	3
4 PAGE/LINE CHANGE REASON	4 IN RE: JOHNSON & JOHNSON )
5 _____	5 TALCUM POWDER PRODUCTS )
6 _____	6 MARKETING, SALES PRACTICES )
7 _____	7 AND PRODUCTS LIABILITY )
8 _____	8 LITIGATION ) MDL NO:
9 _____	9 ) 16-2738 (FLW) (LHG)
10 _____	10 THIS DOCUMENT RELATES TO )
11 _____	11 ALL CASES )
12 _____	12
13 _____	13 REPORTER'S CERTIFICATE
14 _____	14 DEPOSITION OF ALAN CAMPION, Ph.D.
15 _____	15 TAKEN JANUARY 9, 2019
16 _____	16
17 _____	17 I, Karen L. D. Schoeve, Registered Diplomat
18 _____	18 Reporter, Certified Realtime Reporter, and Realtime
19 _____	19 Systems Administrator, residing in the State of
20 _____	20 Texas, do hereby certify that the foregoing
21 _____	21 proceedings were reported by me and that the
22 _____	22 foregoing transcript constitutes a full, true, and
23 _____	23 correct transcription of my stenographic notes, to
24 _____	24 the best of my ability and hereby certify to the

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<p>1 following:</p> <p>2 That the witness, ALAN CAMPION, Ph.D., was</p> <p>3 duly sworn by the officer and that the transcript of</p> <p>4 the oral deposition is a true record of the</p> <p>5 testimony given by the witness;</p> <p>6 That the original deposition was delivered to</p> <p>7 ALEX V. CHACHKES, custodial attorney;</p> <p>8 That a copy of this certificate was served on</p> <p>9 all parties and/or the witness shown herein on</p> <p>10 _____.</p> <p>11 I further certify that pursuant to FRCP No.</p> <p>12 30(f)(i) that the signature of the deponent was</p> <p>13 requested by the deponent or a party before the</p> <p>14 completion of the deposition and the signature is to</p> <p>15 be returned within 30 days from date of receipt of</p> <p>16 the transcript.</p> <p>17 If returned, the attached Changes and</p> <p>18 Signature Page contains any changes and the reasons</p> <p>19 therefor.</p> <p>20 That pursuant to information given to the</p> <p>21 deposition officer at the time said testimony was</p> <p>22 taken, the following includes counsel for all</p> <p>23 parties of record:</p> <p>24</p>	<p>1 FOR DEFENDANT IMERY'S TALC AMERICA, INC.</p> <p>2 KENNETH J. FERGUSON, ESQUIRE</p> <p>3 JENNIFER FOSTER, ESQUIRE</p> <p>4 GORDON REES SCULLY MANSUKHANI, LLP</p> <p>5 816 Congress Avenue, Suite 1510</p> <p>6 Austin, Texas 78701</p> <p>7 D: 512.582.6472 (Mr. Ferguson)</p> <p>8 D: 512.582.6477 (Ms. Foster)</p> <p>9 T: 512.391.0197</p> <p>10 F: 512.391.0183</p> <p>11 kferguson@grsm.com</p> <p>12 jffoster@grsm.com</p> <p>13 --AND--</p> <p>14 MARK K. SILVER, ESQUIRE</p> <p>15 COUGHLIN DUFFY LLP</p> <p>16 350 Mount Kemble Avenue</p> <p>17 P.O. Box 1917</p> <p>18 Morristown, New Jersey 07962</p> <p>19 D: 973.631.6045</p> <p>20 T: 973.267.0058</p> <p>21 F: 973.267.6442</p> <p>22 msilver@coughlinduffy.com</p> <p>23</p> <p>24 FOR DEFENDANT PERSONAL CARE PRODUCTS COUNCIL:</p> <p>RENEE B. APPEL, ESQUIRE</p> <p>SEYFARTH SHAW LLP</p> <p>975 F Street, N.W.</p> <p>Washington, D.C. 20004</p> <p>D: 202.828.5371</p> <p>T: 202.463.2400</p> <p>F: 202.828.5393</p> <p>rappel@seyfarth.com</p> <p>(Continued on following page)</p>
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<p>1 FOR PLAINTIFFS' STEERING COMMITTEE:</p> <p>2 DAVID P. DEARING, ESQUIRE</p> <p>3 P. LEIGH O'DELL, ESQUIRE</p> <p>4 BEASLEY ALLEN, P.C.</p> <p>5 218 Commerce Street</p> <p>6 P.O. Box 4160</p> <p>7 Montgomery, Alabama 36104</p> <p>8 T: 334.269.2343</p> <p>9 F: 334.954.7555</p> <p>10 david.beasley@beasleyallen.com</p> <p>11 leigh.odell@beasleyallen.com</p> <p>12</p> <p>13 --AND--</p> <p>14 RICK YELTON, ESQUIRE</p> <p>15 BURNS CHAREST LLP</p> <p>16 365 Canal Street, Suite 1170</p> <p>17 New Orleans, Louisiana 70130</p> <p>18 D: 504.930.4746</p> <p>19 T: 504.799.2845</p> <p>20 F: 504.881.1765</p> <p>21 ryelton@burnscharest.com</p> <p>22</p> <p>23 FOR DEFENDANTS JOHNSON &amp; JOHNSON ENTITIES:</p> <p>24 ALEX V. CHACHKES, ESQUIRE</p> <p>ORRICK HERRINGTON &amp; SUTCLIFFE LLP</p> <p>51 West 52nd Street</p> <p>New York, New York 10019-6142</p> <p>D: 212.506.3748</p> <p>T: 212.506.5000</p> <p>achachkes@orrick.com</p> <p>--AND--</p> <p>JACK N. FROST, JR., ESQUIRE</p> <p>DRINKER BIDDLE &amp; REATH LLP</p> <p>600 Campus Drive</p> <p>Florham Park, New Jersey 07932-1047</p> <p>D: 973.549.7296</p> <p>T: 973.549.7000</p> <p>F: 973.360.9831</p> <p>Jack.Frost@dbi.com</p>	<p>1 FOR DEFENDANTS PTI ROYSTON LLC AND PTI UNION LLC:</p> <p>2 TARIQ M. NAEEM, ESQUIRE</p> <p>3 TUCKER ELLIS   LLP</p> <p>4 950 Main Avenue, Suite 1100</p> <p>5 Cleveland, Ohio 44113-7213</p> <p>6 D: 216.696.3675</p> <p>7 T: 216.592.5000</p> <p>8 F: 216.592.5009</p> <p>9 tariq.naeem@tuckerellis.com</p> <p>10</p> <p>11 I further certify that I am neither counsel</p> <p>12 for, related to, nor employed by any of the parties</p> <p>13 in the action in which this proceeding was taken,</p> <p>14 and further that I am not financially or otherwise</p> <p>15 interested in the outcome of the action.</p> <p>16 Subscribed and sworn to on this the 9th</p> <p>17 day of January, 2019.</p> <p>18</p> <p>19 Karen L.D. Schoeve, RDR, CRR</p> <p>20 Realtime Systems Administrator</p> <p>21 NCRA Exp. Date: 09-30-21</p> <p>22 Golkow Litigation Services</p> <p>23 Firm Registration No. 690</p> <p>24 One Liberty Place</p> <p>1650 Market Street, Suite 5150</p> <p>Philadelphia, Pennsylvania 19103</p> <p>T: 877.370.3377</p> <p>F: 917.591.5672</p> <p>www.golkow.com</p>